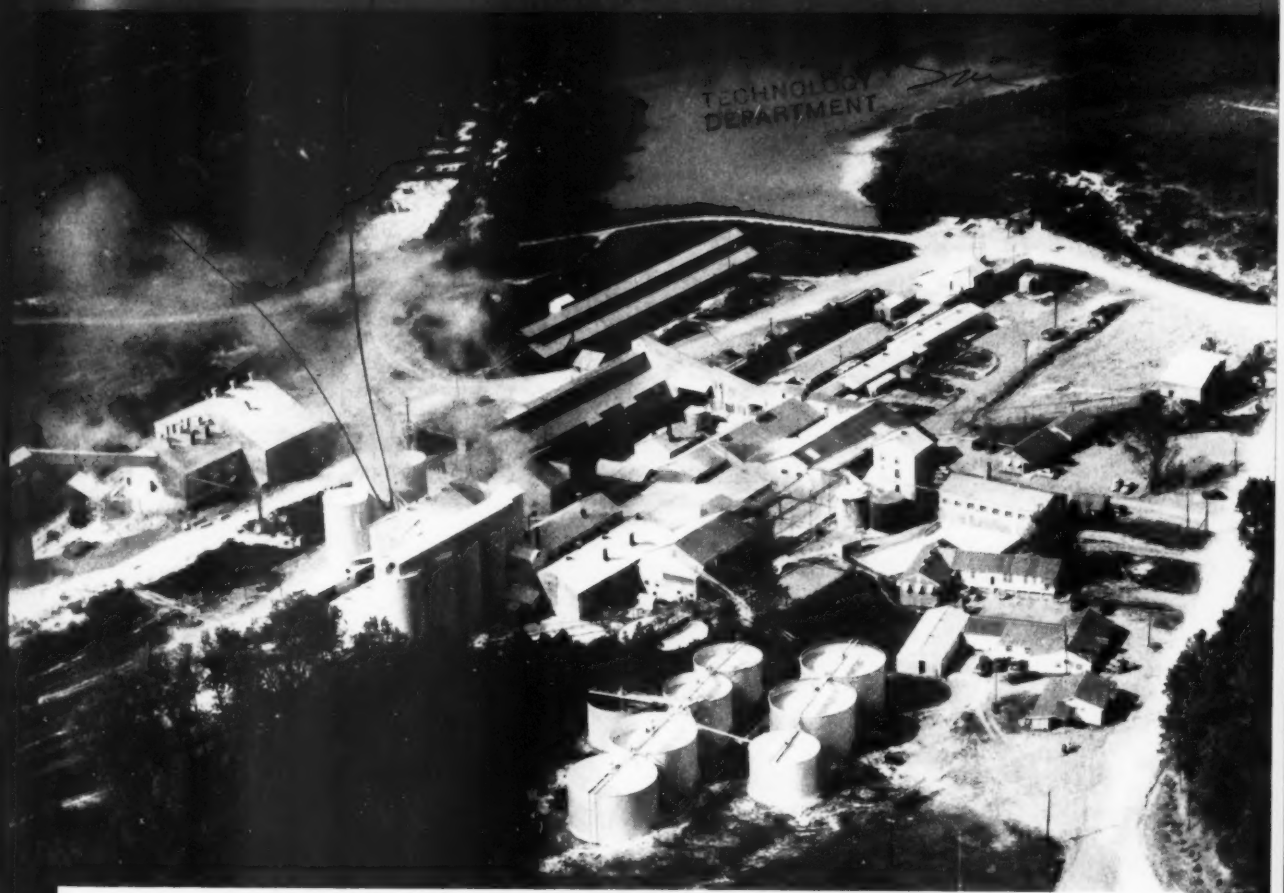
- Finch-Pruyn modernization program
- Available lubrication equipment
- Hydrotropic pulping process
- 41st PIMA Conference
- 11th TAPPI Coating Conference

The Paper Industry

Publishers of PAPER AND PULP MILL CATALOGUE

TECHNOLOGY DEPARTMENT



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fine clays to help make good paper better

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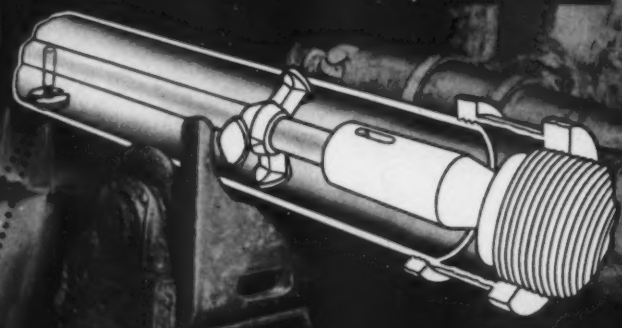
Our 42nd Year" July 1960

now DOUBLE BENEFITS



...Emerson showe plus reciprocating motion

"With Emerson Reciprocating Showers on the job the downtime saved from having to clean wires frequently has helped increase production nearly 5% on our wide variety of basis weights," says RUSSELL W. HAMILTON, Resident Manager, St. Regis Paper Company, Nashua River Division. ***"Wire life has been lengthened too, in spite of increasing the machine speed more than 14% on the light basis weights.***

"Ridging and spots are eliminated because water pressure is equally distributed across the wire. Even if a nozzle becomes temporarily clogged the horizontal back-and-forth spray coverage makes up for it. Foreign materials have little chance of forming on the wire, which improves sheet formation."

Designed for white water systems, as well as fresh, Emerson Reciprocating Showers hold water costs to a minimum and check the loss of solids. This is due to Emerson's internal clean-out mechanism. Stainless steel brushes, positioned opposite each nozzle, clear the openings of lumps by a simple twist of the handle. As brushes momentarily cover the nozzle openings, a valve opens to permit complete end-to-end flushing of the pipe.

Emerson Reciprocating Showers come in pipe diameters of from 1½ to 6 inches, in lengths to 376 inches. Each is engineered for its particular application with the proper nozzle size and spray pattern specified.

Pipe travel is provided by an automatic reversing pneumatic cylinder connected to the mill air supply. Speed of travel and length of stroke are easily adjustable. The cylinder may be mounted on either end, at either side of the pipe, which rides on spool-type, sealed bearing rollers. All reciprocating mechanism comes as a complete unit. It is easily, quickly installed with new showers, or with the showers already in operation.

If you want efficient, effective spray coverage and prolonged wire life — if you want to cut downtime and conserve water — if you want to step up production and improve sheet quality — install Emerson Reciprocating Showers. Call or write our sales representative nearest you, or The Emerson Manufacturing Co., Division of John W. Bolton & Sons, Inc., Lawrence, Massachusetts.

BOLTON EMERSON
TRADE MARK

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B.C. Forest Service Phot

PROMISE HIGH QUALITY BLEACHED PAPER PULP IN 1961

Early in 1961, a new high quality market pulp mill will go on stream near Castlegar, British Columbia, at the foot of the Arrow Lakes region of the Columbia River. Celgar Limited will utilize almost 900,000 acres of prime northern-type forest lands held under a Tree Farm Licence in perpetuity.

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Celgar Kraft will combine many of the best qualities of Northern and Western pulps to produce a product with an exceptional balance of properties. The long, tough fibres from high-density softwoods develop high bursting strengths coupled with outstanding tear resistance over a wide range of freeness, and in a variety of stock preparation equipment.

V4247-1

COLUMBIA PULP SALES LIMITED has been formed to distribute Celgar Kraft pulps and Columbia Cellulose sulphite pulps. Offices are located at:
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1600 Dorchester St. West, Montreal 25, P.Q.

Celgar Kraft

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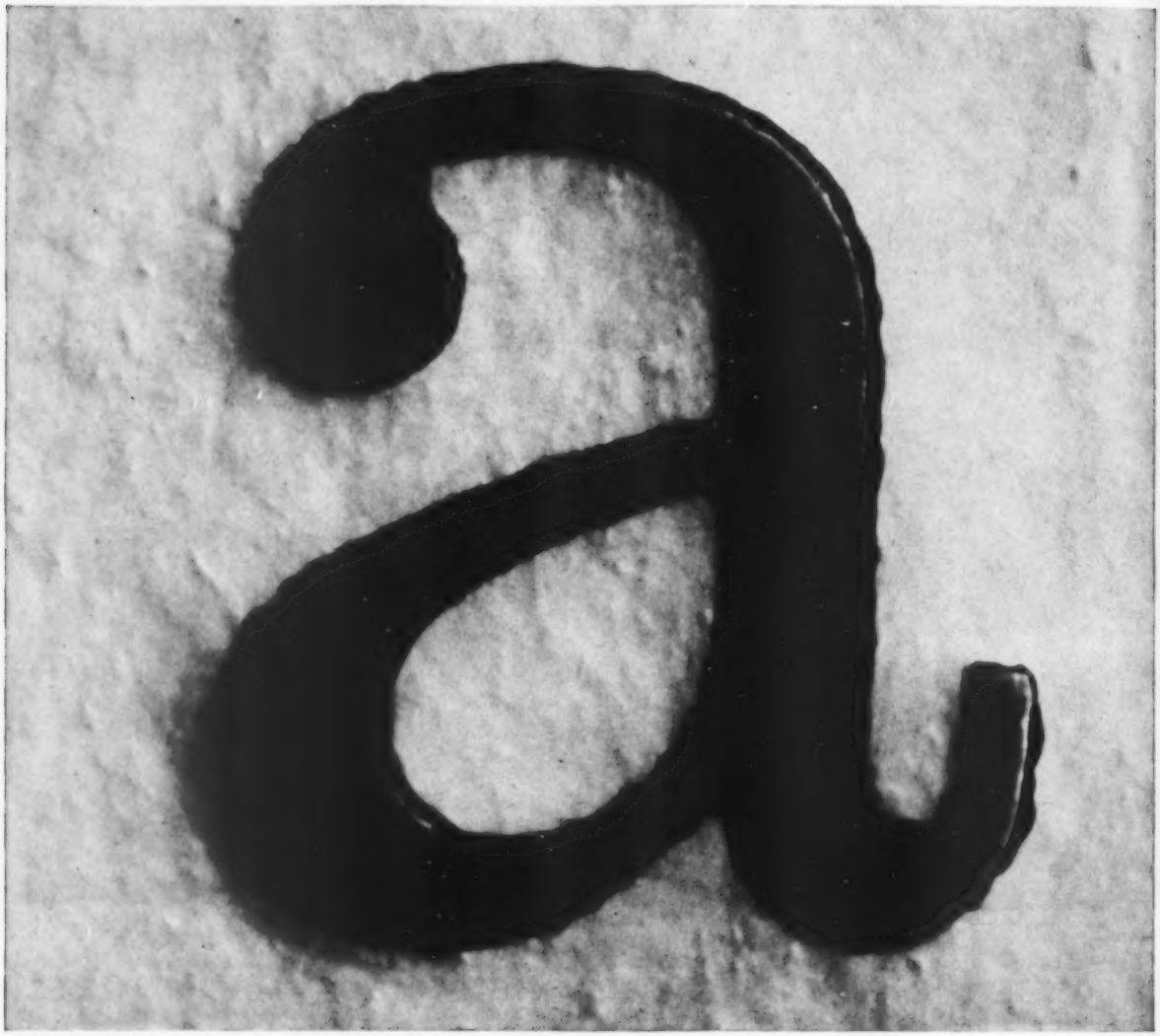
DOW | LATEX



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Now . . . better control of paper uniformity with

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The Paper Industry

Technology • Engineering • Management • Production

VOLUME 42 **NUMBER 4** **JULY 1960**

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The PAPER INDUSTRY is indexed regularly in Engineering Index and Industrial Arts Index. An index to each volume is issued annually by the publisher as a part of the April number.

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NEW *Felt Facts*

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All along the line . . . the manufacture of your Albany Felt is a custom process, under the most rigid quality controls.

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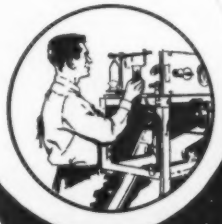

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From our point of view..

Diagnosis and cure or autopsy and verdict in marketing?

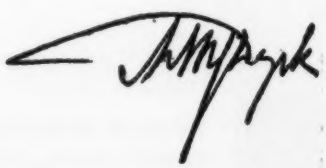
Our editorial in the June issue was written in recognition of the industry's shift of emphasis toward marketing to the extent that marketing has become a major force in industry today. We further expressed the need for a more determined effort to expand our markets on a worldwide scope.

Since then, we have had a chance to acquaint ourselves with the thoughts expressed by (1) H. E. Humphreys, U. S. Rubber Co., who urged that our industry project its thinking toward a global concept of business and industrial operations; (2) Ray B. Eppert, Burroughs Corp., who believes that the best way to meet foreign competition is not through tariffs, that also exclude our goods from foreign markets, but with better products, better production efficiency and, above all, better marketing efforts; and (3) T. B. McCabe Jr., Scott Paper Co., who advocates the establishment of a marketing institute staffed with top-flight social scientists and mathematicians to develop new marketing techniques and generally encourage and advance our marketing technology.

The underlying desire in all these discussions is for a new business philosophy that is based less and less on protective tariffs that lead to economic isolation and more and more on improved productivity and on a feeling of self-reliance and courage that come with a frank diagnosis and understanding of economic conditions. Projecting one's thinking to operations on a global basis would, according to Humphreys, entail a willingness "to be ready to build a plant in India as in Indiana" and to realize that "when we do business in another country, we actually become part of the economy of that country".

Speaking about the conditions of the market, Mr. Eppert said "it is better to have a diagnosis and a cure than an autopsy and a verdict". There have been too few diagnoses and too many autopsies in our international ventures, both on questions of politics and economics. This has left us exceedingly vulnerable, especially in our economic competition with the Soviets, our main adversary who has no scruples about employing the tools of trade "not so much for economic reasons as for political purposes".

Our main concern, therefore, must be to do away with this vulnerability and create the favorable economic climate we desire in the international market. If the thoughts exemplified by such men of stature as quoted in this editorial are an indication of an impending breakthrough in our business philosophy on a worldwide scope, then we should be well on the way toward a new era of economic activity that will more truly reflect the vigor and ingenuity of this nation's industrial endeavor.



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Vertical Single, Double Reduction for use with Extended Output Shafts

Foote Bros. Worm Gear Drives combine precision generated worm gearing with balanced design bearings and shafts to deliver economical, dependable right angle power for any application. Drives are rated to AGMA Standards. Write for Catalog HGB.

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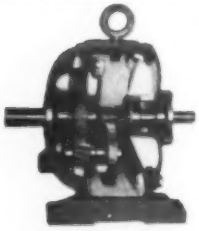
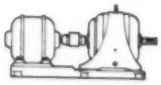


Foot Mounted Straight Line

- 554 Stock Combinations
- Capacities From 1 to 150 HP
- Output Torque to 100,000 lb. in.

Foot Mounted Right Angle

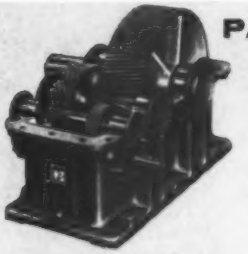


Base Mount

Flange Mounted Straight Line and Right Angle Types

Concentric Shaft Drives incorporate high hardness, premium quality Duti-Rated Lifetime Gearing to provide greater load carrying capacity and longer service life. Compact design takes less space per rated horsepower. Rated to AGMA Standards. Write for Engineering Manual LP No. 3.

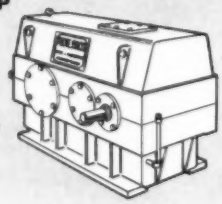
PARALLEL SHAFT DRIVES



Standard Housing

- 62 Standard Sizes • 9 Shaft Arrangements
- Capacities to 1550 HP

All Steel Housing



Foote Bros. Parallel Shaft Drives are designed for applications with heavy shock loads, high overhung loads—or installations requiring multiple output shafts. Ruggedly built to deliver trouble-free performance under most severe conditions. Rated to AGMA Standards. Write for Catalog MPB.

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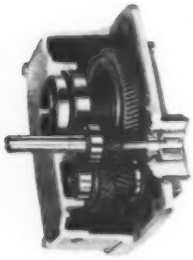

- 45 Stock Combinations
- Capacities From ¼ to 40 HP
- Output Speeds: 9 to 420 RPM

Single Reduction

Double Reduction

Flange Mount

Duti-Rated Lifetime Gearing in Foote Bros. Shaft Mounted Drives transmits more horsepower—size-for-size than any other units to make them more economical, more efficient, in any application. Designed for quick, easy mounting. Rated to AGMA Standards. Write for Catalog SMB.

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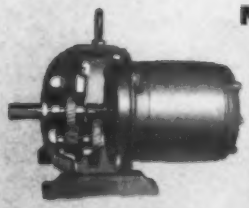

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- More than 3000 Stock Combinations
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- Capacities to 150 HP

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Vertical Gearmotor

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Stronger, tougher Duti-Rated Gearing in Foote Bros. Motorized Drives guarantees smoother operation, longer life. Foote Bros.—Louis Allis Gearmotors available with any type of motor to meet your needs. Line-O-Motor Drives permit you to use any NEMA Frame motor. Rated to AGMA Standards. Write for Catalog MRA.

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FROM DESIGN—to Fabrication and Erection

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Profit from pulp takes more than a mill and men to run it. The same will be true of the next digester you buy.

That's why CB&I offers a complete and expertly coordinated 4 point digester *service*. Our facilities to (1) design, (2) engineer, (3) fabricate and (4) erect are duplicated by few, if any other, sources.

Complete stress-relieving facilities are maintained at each CB&I plant. And CB&I crews are fully equipped and experienced for field stress-relieving. Partial or full X-ray and magnetic particle examination of structures in shop or field is available to meet all code or customer requirements.

Hortonclad®, CB&I's exclusive, vacuum bonding process can provide digester cladding of integral, continuous bond having exceptional strength and corrosion resistance.

These are but a *few* of the reasons why CB&I digesters and pulp plant equipment are selected for the most rigid requirements. And, why CB&I services offer an exceptionally high degree of quality control between shop and field. A bulletin on *CB&I Pulp and Paper Structures* and our *Field Services* bulletin will provide more details. Write our nearest office for your copies.

PP-25

Chicago Bridge & Iron Company

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Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, GREENVILLE, PA. and NEW CASTLE, DEL.

Top left: 40-ft. long digester designed for working pressure of 150 lbs. per sq. in. leaves our Birmingham plant where it was X-rayed and stress-relieved.

Middle: Digester leaves CB&I stress-relieving furnace at our Birmingham plant. Furnace can handle vessels up to 13-ft. diam. by 79-ft. long in one heat.

Below: 60-ft. high digesters erected, stress-relieved and seam welds X-rayed in the field by CB&I at Weyerhauser's 400-ton sulphite pulp mill at Cosmopolis, Washington.

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960

custom tailoring costs less than "ready-to-wear"

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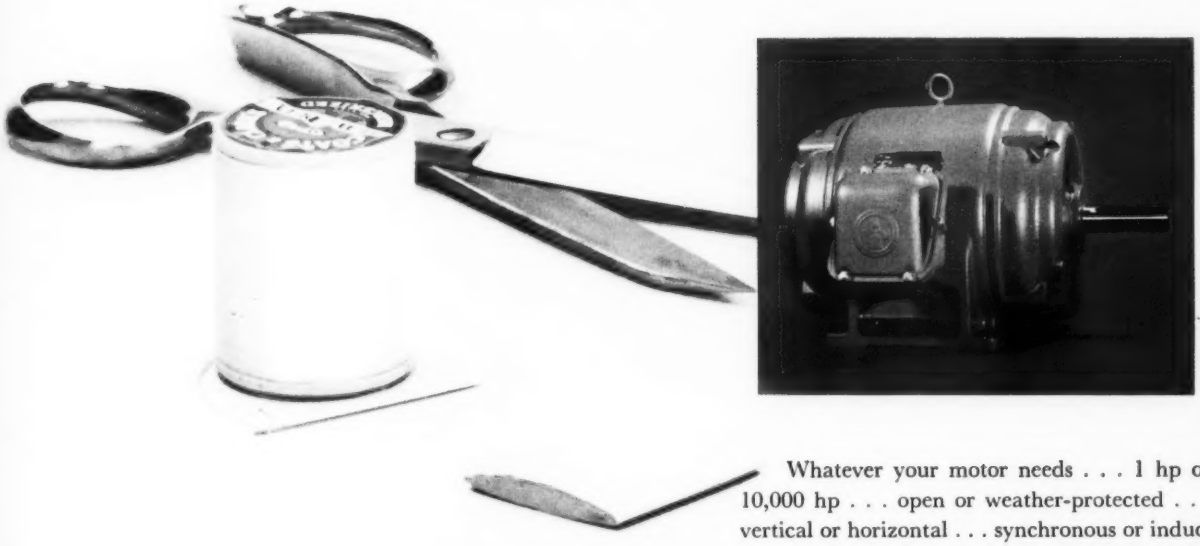
This *flexible* application of varied insulating materials and processes "pays off" in low maintenance, uninterrupted production, prolonged service.



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New Idea in Material Handling Cuts Costs at Bird & Son, Inc.

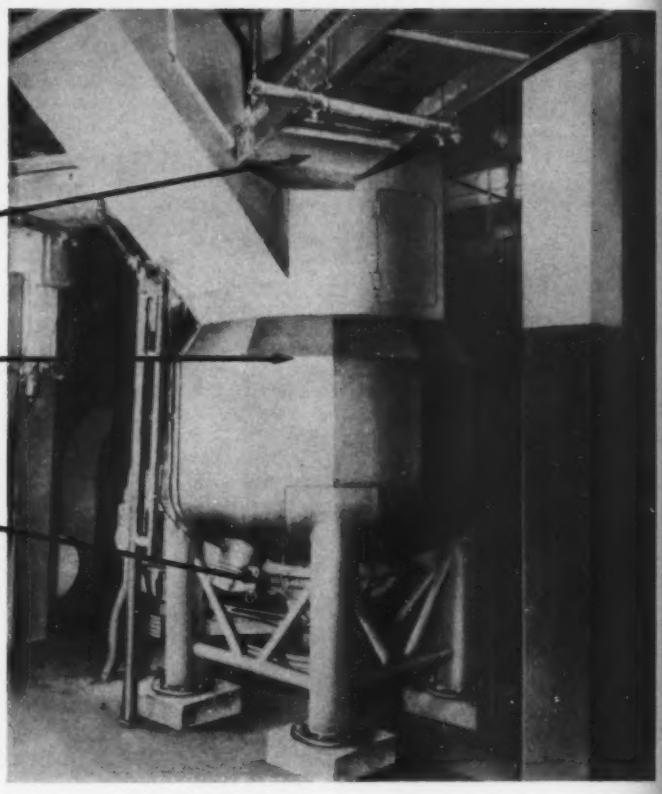
From
Converting Mill . . .

Via Conveyors

To Pulper

To Pump*

To Pulp Mill



With the Impco Solvo® Pulper

The Model 2U Solvo Pulper, playing a dual roll at Bird & Son, Inc., East Walpole, Massachusetts, has sharply reduced previous material handling costs. It is operating continuously under automatic control as both a material handler and a pulper. Boxboard broke from the converting machines is delivered by conveyors to the Solvo which simultaneously pulps and pumps it to the pulp mill. The units' single 50 HP motor handles both pulping and pump-away demand at a 24 ton/day rate.

This is one of a wide variety of Solvo Pulper applications. Others include de-ink cooking, dry end broke handling, paper machine furnish pulping, transfer of high yield cooked chips to refiners as well as the normal pulping of broke, wet strength and waste paper. Units are available for any capacity requirement.

*The pulping element, extractor plate and stock pump are one rotating assembly.

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IMPROVED MACHINERY INC.
NASHUA, NEW HAMPSHIRE
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– but remember –

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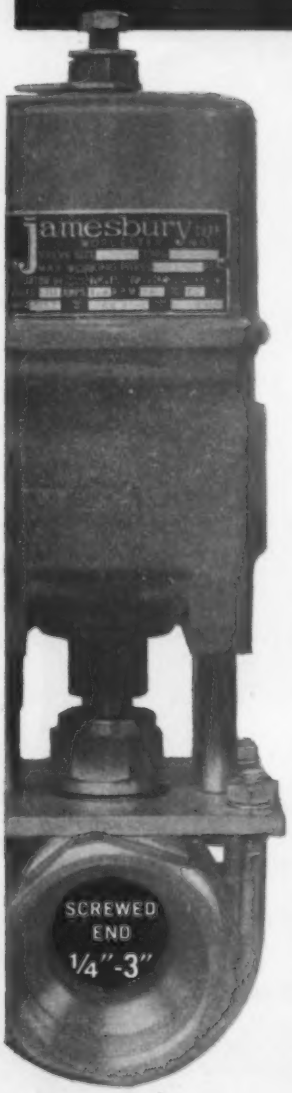

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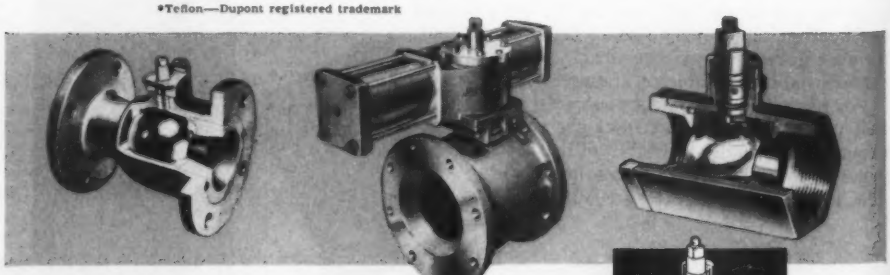
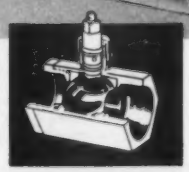
**Consult factory on availability of 12"

*Teflon—Dupont registered trademark





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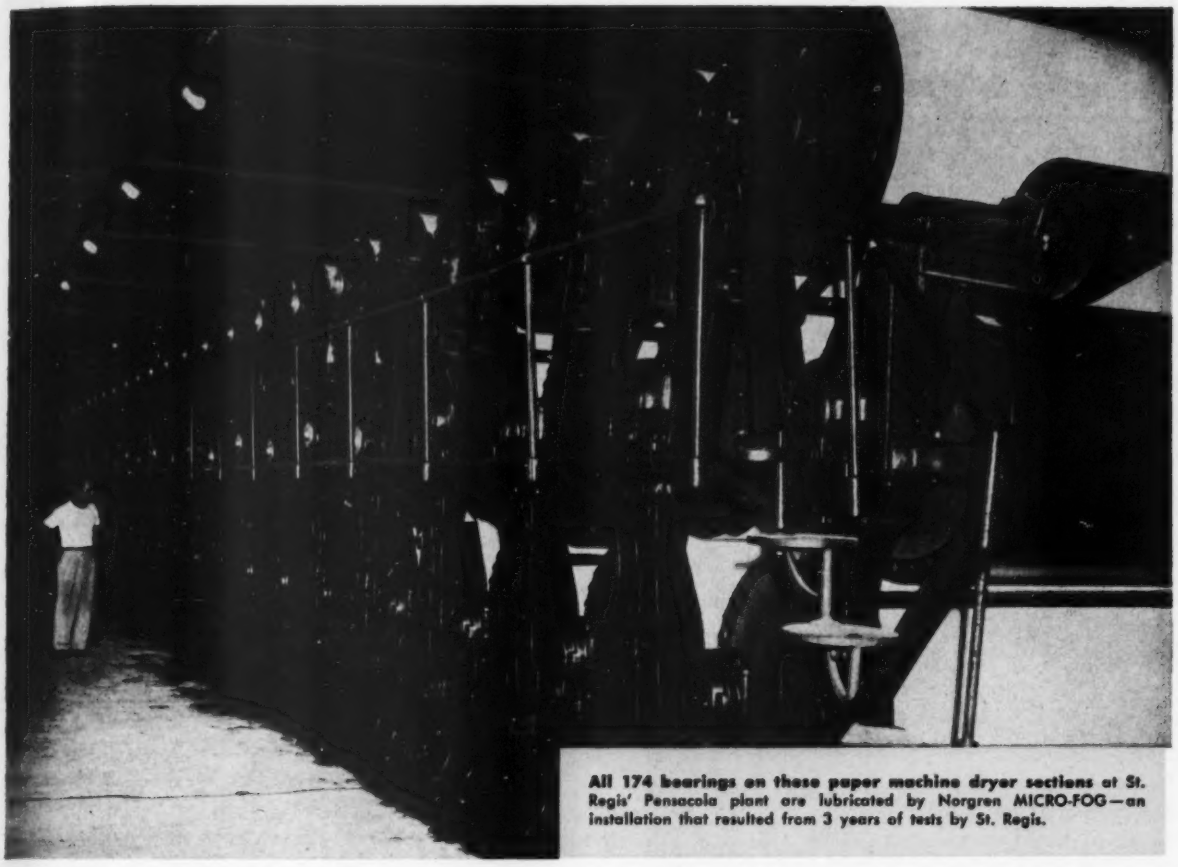
208-9

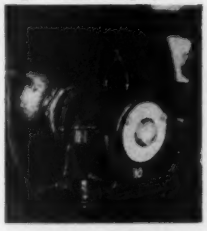


All 174 bearings on these paper machine dryer sections at St. Regis' Pensacola plant are lubricated by Norgren MICRO-FOG—an installation that resulted from 3 years of tests by St. Regis.

ST. REGIS PAPER CO. TESTS PROVE NORGREN MICRO-FOG LUBRICATION BEST

Results of three years of testing by St. Regis prove Norgren MICRO-FOG Lubrication on paper machine dryer sections best in every way...

1. Thoroughness of MICRO-FOG Lubrication is far superior—Delivery of oil is consistent throughout bearing system.
2. Maintenance of lubrication system greatly simplified—Eliminated periodic installation of grease blocks and hand oiling.
3. Bearing temperatures reduced—Heat reduction averaged 8° to 10° F.
4. Less lubricant is consumed—Ended frequent oil changes previously necessary due to discoloration and plastic-like formation.
5. Eliminated paper losses formerly caused by excessive lubrication.
6. Simple to install, easy to operate compared to circulating system.
7. Lint and other contaminants are excluded from bearings — MICRO-FOG system maintains positive pressure in bearing housings.



How MICRO-FOG distribution line enters a plain bearing.

For complete information about this application, call your nearby Norgren Representative listed in your telephone directory—or WRITE FOR BLUEPRINT MF-23-A

MICRO-FOG by NORGREN

C. A. NORGREN CO.

3455 SOUTH ELATI STREET, ENGLEWOOD, COLORADO

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Finch-Pruyn completes modernization of finishing and converting departments

A. W. J. DYCK

Finch-Pruyn's expansion and modernization program included a modern streamlined finishing and converting department, a new NSSC bleached sulfite pulp mill, expansion of the barking and steam-generating facilities, and improvements on the paper machine.

FINCH-PRUYN'S completion of the bleached neutral sulfite semichemical pulp mill in 1957, led to the expansion and modernization of the entire finishing and converting department with the result that the company now has one of the most modern and streamlined converting operations in the paper industry.

L. A. Beeman
President

E. S. White
V.P. & Treas.

L. A. Beeman Jr.
V.P. & Mgr. Mkg.

H. E. Earl
Plant Mgr.

Prior to 1957, the company confined itself solely to the manufacture of a variety of groundwood papers, both bleached and unbleached. The new NSSC pulp mill provided the company with a daily quantity of 75 tons of bleached sulfite pulp, which enabled it to produce a new and improved line of offset, bond, mimeo and duplicator papers.

The new paper grades are marketed under the "Coopers Cave" brand for groundwood content papers and the "Finch" brand for papers not containing groundwood.

The new pulp mill also led to substantial expansions of the wood room and steam generating facilities, installation of a sodium sulfite liquor preparation process, and improvements on the paper machines.

In July, 1960, the company expects to complete the addition of a new digester which will double the pulp mill capacity.

Woodroom expansion

Expansion in the woodroom involved the addition of a 67 ½ ft. long and 12 ft diameter, 30 cords per hour capacity Hydrovat barking drum at a cost of $260,000. The drum, supported on 8 trunnions, is driven by a 250 hp motor through a line shaft and totally enclosed speed reducer.

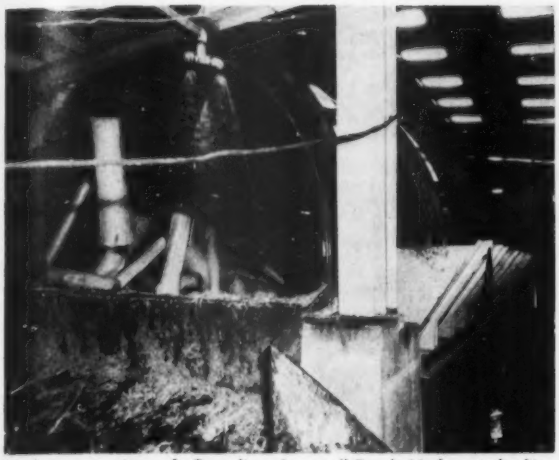
The Hydrovat drum consists of two sections, each 33 ft. 8 in. long. The inlet section consists of solid plate lined on the inside with heavy duty staves. This section is kept flooded with hot water to a depth of 2 feet during operation and is designed to thaw the frozen bark and complete more than 50 per cent of the barking

G. Herwig
Tech. Dir.

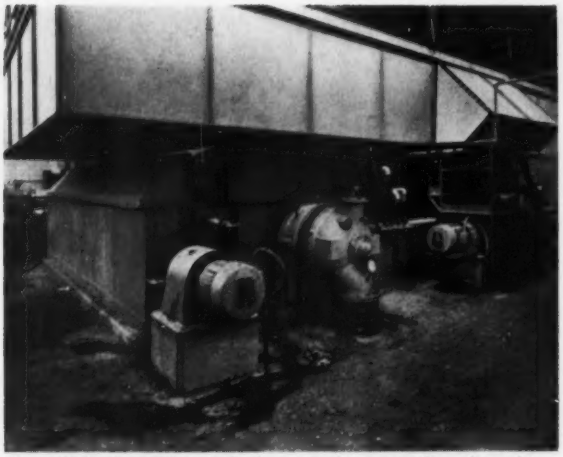
R. N. Taylor
N.S.S.C. Supt.

S. P. Hoopes
Dir. of Purch.

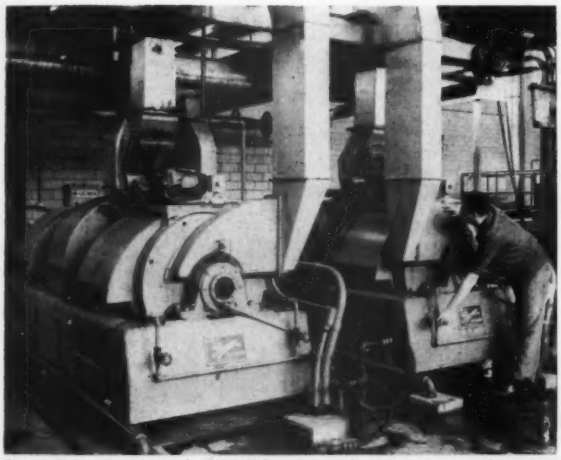
R. C. Whyland
Woodlands Mgr.



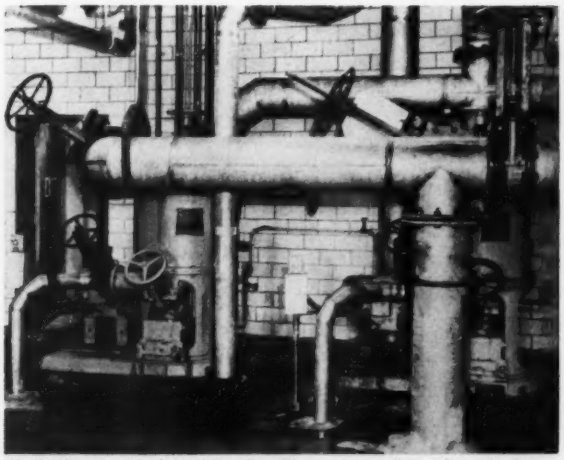
Discharge section of Canadian Ingersoll-Rand Hydrovat barking drum showing final cleaning of logs with fan-tail showers.



View of the Dorr-Oliver 8-ft. by 16-ft. brown stock washers driven by Reliance 10-hp. motors.

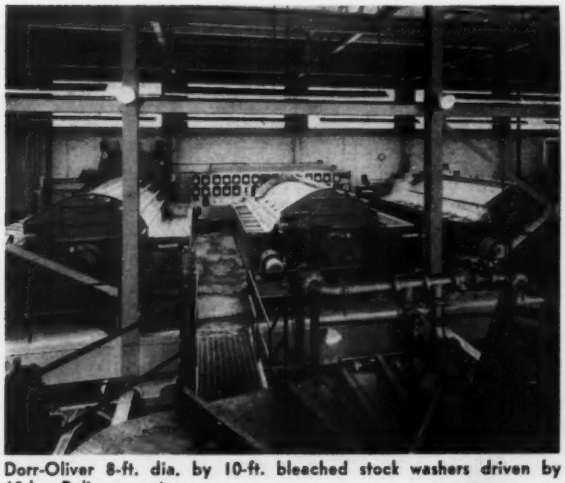


Bauer Bros. No. 410 double-disk refiners featuring 40-in. disks and driven by 400-hp. Electric Machinery motors.



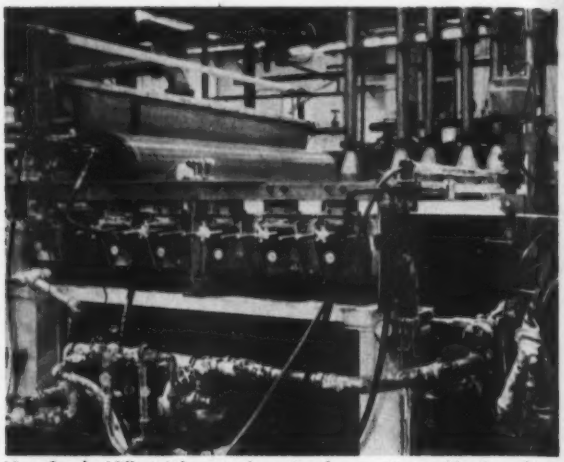
Black-Clawson Model 24-P selectifier screens of stainless steel construction and driven by 25-hp. motors.

Top of 14½-ft. dia. by 51-ft. high, rubber-lined chlorination tower.

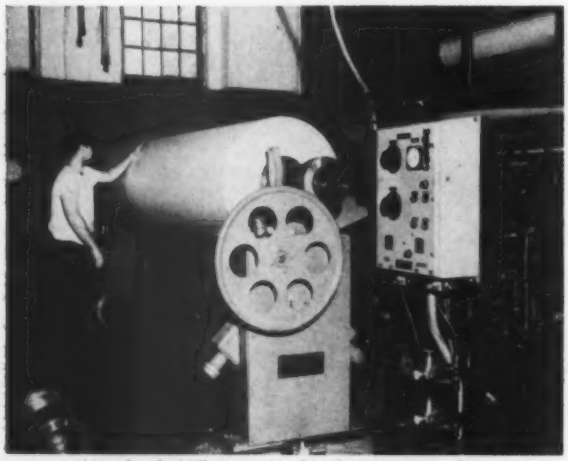


Dorr-Oliver 8-ft. dia. by 10-ft. bleached stock washers driven by 10-hp. Reliance motors.

Stebbins Engineering high-density stock storage towers of tile construction.



New Sandy Hill stainless steel suction box section on No. 2 machine.



New Sandy Hill center-wind reel on No. 1 machine.

Clark-Aiken 112-in. cutter equipped with automatic sheet counter.

Economy Baler Co. Model 127 upstroke-type baler.

Skids are wrapped and strapped with Acme overhead wire reels and strapping tool.

process. Oversize logs are split in a log splitter prior to entering the drum.

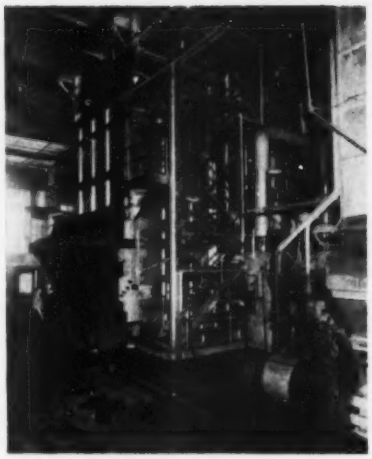
Barking is completed in the second or discharge section which features heavy duty deep crown Weldrum staves. Here also all bark and water are eliminated through bark escape slots. At the discharge head, fan tail showers insure utmost cleanliness of the barked logs.

All bark is collected in a hopper located under the discharge section and is sluiced onto a bark conveyor by a 400 gpm sump pump.

Boiler house expansion

Increased steam consumption required the addition of a new $750,000 boiler designed to generate 80,000 lb. of 200 psi steam per hour under normal operating conditions.

The boiler is a two-drum, single-pass unit designed for 250 psi pressure. It has a combined convection zone and water wall area of 10,657 sq. ft. and is equipped with an integral economizer and tubular air preheater of 980 sq. ft. and 5,350 sq. ft. of heating surface respectively. The boiler is fired by a Rotograte stoker featuring three overthrow rotor feeder distributors for introducing the coal into the furnace, forward moving traveling grate for continuous ash discharge at the front of the stoker, and pneumatic fly ash return system for recovery of fly carbon particles trapped in settling hoppers behind the boiler. Both the feeder distributors and the traveling grate are equipped with complete hydraulic drive as part of the equipment.



Erie City 80,000-lb. steam-per-hr. boiler equipped with Detroit Stoker Rotograte stokers.

NSSC pulp mill

While this mill has been in operation since 1957, a brief review of the pulping operation is justified in view of the facts that (1) the completion of this mill was the main cause for the additional expansions described in this paper, (2) the recent installation of a sulfur burner which will enable the company to manufacture its own sodium sulfite for the pulping process, and (3) the installation in 1960 of a second digester which will double the semichemical pulp output.

Hardwood chips, derived from birch, beech and maple, are fed into the air stream of a pneumatic conveying system and blown over a distance of 500 ft by a 4500 cfm blower unit through a 10 inch pipe line from the chip screens into a chip silo of tile construction and 20,000 cu. ft. capacity. The blower is driven by a 100 hp motor.

The chip silo is equipped with a 17 ft. double-plow rotary table feeder which, operating at 2 rpm and capable of handling 20,000 cu. ft. of chip per hour, supplies chips to the three belt conveyors which in turn feed a 400 fpm double row bucket elevator supplying the digesters. The bucket elevator has a capacity of handling 333 cu. ft. of wood chips per minute.

One of the belt conveyors supplying the bucket elevator is equipped with a chip weigher which automatically supplies the desired tonnage of chips to the digester and then shuts off the chip conveying system.

The two digesters are 11 ft. in dia. by 49 ft. high and 3500 cu. ft. capacity. They are clad with 316 E. L. C. stainless steel. Both liquor charging and cooking control is completely automatic. The second digester is equipped with an 8 in. Double Seal ball type blow valve.

At the end of the cook, the digested chips are blown into a blow tank and processed continuously through the refining, washing and bleaching stages.

First, the digester chips are metered by rotary feeders to dewatering screens and then to two No. 410 and one No. 411 double-disk refiners equipped with 40 in. disks. The refiners are operated in parallel, each driven by two 400 hp synchronous motors. The motors are separately force-ventilated by overhead duct work and have unique stator frame suspension.

The pulp from the refiners is diluted to the required consistency and stored in an 11 ft. by 24 ft. by 10 ft. refined stock chest of tile construction. From here it is pumped to two Model 24-P selectifier screens of stainless steel construction and driven by 25 hp motors through spiral bevel right angle gear drives. These screens feature 11-gauge stainless steel cylinders with drilled .050 inch holes. Rejects from the selectifier screens are passed through a No. 623 cleaner for rescreening.

From the selectifier screens the ac-

L. J. Dolhof
Paper Prod. Mgr.

H. J. Roehner Jr.
Finishing Mgr.

E. P. Bernier
Groundwood Supt.

G. G. Cole
Pulp Prep. Supt.

K. C. Kroetz
Plant Engineer

T. E. Cronquist
Engineer

W.E.Montgomery Jr.
Engineer

H. Robertson Jr.
Engineer

Principal equipment installed at Finch-Pruyn Mill during recent expansion

Wood Room

Barking drum Hydrovat, 12 ft. diameter by 67½ ft long, driven by a 250 hp motor .. Canadian Ingersoll Rand Ltd.
Log splitter ..... Cathage Machine Co.
Motors, electric ..... General Electric Co.
Structural steel ..... Albany Steel & Iron Works
Sump pumps, 400 gpm, on barker ..... Fairbanks, Morse & Co.

Boiler House

Boiler, 80,000 lb./hour of steam at 200 psi pressure, two-drum, single-pass, with integral economizer and tubular air preheater ..... Erie City Iron Works
Coal conveying equipment, No. 147 CC belt elevator, operating at 298 fpm and handling 40 tons of coal per hour ..... Link Belt Co.
Stoker, Rotograte, with three overthrow rotor feeder distributors, forward moving traveling grate, and pneumatic fly ash return system ..... Detroit Stoker Co.
Hydraulic drive, for traveling grate and feeder distributors ..... Detroit Stoker Co.
Instrumentation ..... Hagen Chemicals & Controls Inc.

N.S.S.C. Pulp Mill

Blower, positive displacement, 4,500 cfm, driven by a 100 h.p. motor, on pneumatic chip conveying system ..... Roots Connersville Blower
Blow valve, 8-inch, double seal ball valve ..... Jamesbury Co.
Brown stock storage tower, tile construction, 15½ ft dia. by 34 ft high ..... Stebbins Eng. & Mfg. Co.
Brown stock washers (2), 8 ft by 16 ft ..... Dorr-Oliver Inc.
Bucket elevator, double-bucket design, 400 fpm, 333 cu. ft. per minute capacity ..... Link Belt Co.
Centri-cleaners (32), No. 606, located between hypo-tower and hypo-washers ..... Bauer Bros. Co.
Chip silo, tile construction, 20,000 cu ft. capacity ..... Stebbins Eng. & Mfg. Co.
Chip feeder, 17 ft. dia., rotary table type, 2 rpm, 20,000 cu. ft/hr. capacity ..... Link Belt Co.
Consistency regulators ..... De Zurik Corp.
De-watering screens ..... Dorr-Oliver Inc.
Digestors (2), 3,500 cu. ft. capacity each, stainless steel clad, 11 ft. diameter by 49 ft. high ..... Chicago Bridge & Iron Works
Feeders, rotary, for metering stock to refiners ..... Dorr-Oliver Inc.
Instrumentation, on washing, bleaching and sulfur burning operations ..... Taylor Instrument Co.
Mixer, double-shaft, preceding hypo-tower Improved Machinery, Inc.
Mixers, stationary, baffle-type, rubber-lined, preceding chlorine tower ..... Hooker Chemical Corp.
Motors, electric ..... General Electric Co.
Motors (4) 400 h.p. on double-disk refiners, separately force-ventilated, synchronous ..... Electric Machinery Mfg. Co.
Motors, 10 hp, on brown and bleached stock washers ..... Reliance Electric & Eng. Co.
Pneumatic chip conveying system, 500 ft., equipped with 4,500 cfm blower ..... Rader Pneumatics
Pumps ..... Warren Pumps, Inc.
Pumps ..... Ingersoll-Rand Co.
Refined stock chest, tile construction, 11 ft. by 24 ft. by 10 ft ..... Stebbins Eng. & Mfg. Co.
Refiners (2), double-disk, two No. 410 and one No. 411, with 40 inch disks ..... Bauer Bros. Co.
Scrubber, on SO_2 absorption tower ..... Peabody Co.
Selectifier screens (2), model 24-P, stainless steel construction, 11 gauge SS cylinders, with drilled .050 inch holes ..... Black-Clawson Co.
Sulfur burner, spray-type, self-atomizing, steam jacketed, 15 tons/day capacity ..... Chemical Construction Corp.
Sulfur pump, vertical, glandless, centrifugal ..... Chemical Construction Corp.
Sulfur storage tank, 350 ton capacity, equipped with steam coils ..... Chemical Construction Corp.
Tile work and tile linings ..... Stebbins Eng. & Mfg. Co.
Washers (3), bleached stock, 8 ft. diameter by 16 ft. ..... Dorr-Oliver Inc.

Paper Machine Room

Fibermaster, driven by a 200 hp motor ..... E. D. Jones Corp.
Reel, center-wind, with pneumatically positioned secondary transfer arms ..... Sandy Hill Iron & Brass Wks.
Lumpbreaker rolls, 20 inch dia., covered with 2-inch thick rubber, equipped with wetting showers and pneumatic quick-lift arrangement Sandy Hill Iron & Brass Wks.
Separators (6), 10 inch ..... Sandy Hill Iron & Brass Wks.
Suction Boxes (6), stainless steel, oscillating ..... Sandy Hill Iron & Brass Wks.

Finishing and converting area

Baler, model 127, upstroke type, with split-door and retainer dog device ..... Economy Baler Co.
Cutter, 112-inch, model 1956, equipped wih pneumatic automatic sheet counter ..... Clark-Aiken Co.
Drill, Hi-Speed, multiple-head, 30 strokes/min., tip-toe operation ..... The Lawson Co.
Skid banding system ..... Acme Steel Co.
Trimmer, 65-inch, Z-action, hydraulic ..... Harris-Seybold Co.
Trimmer, Model "A", Bracket safety type ..... The Dexter Co.

cepted pulp goes to the brown stock washers, a two-stage counter-current system using two 8 ft. dia. by 16 ft. wide stainless steel washers driven by 10 hp motors. It is then stored at 13 per cent consistency in a 15 ½-ft. dia. by 34-ft. high density brown stock storage tower of tile construction.

The pulp is bleached to an 87 G.E. brightness in a three-stage bleach system consisting of the chlorine, caustic extraction, and hypochlorite stages. The bleach plant has a daily capacity of 65 tons of bleached pulp. It includes a 14 ½-ft. dia. by 51-ft. high rubber-lined chlorine bleach tower, a caustic extraction tower which is 8 ½ ft. dia. by 34 ft. high, and an 11-ft. dia. by 34-ft. high hypochlorite tower, and three 8 ft. by 16 ft. bleached stock washers driven by 10 hp motors.

Of special interest are the double-shaft mixer preceding the hypo-stage and the stationary baffle-type chlorine mixers preceding the chlorination stage. The latter are composed of flanged rubber-lined pipe sections that fit into the stock line and have no moving parts.

A novel variation is the use of 32 No. 606 centri-cleaners in the stock line between the hypo tower and the hypo washers. These centri-cleaners are equipped with water eductors to prevent air from entering the stock.

Bleached stock is stored at 11-per cent consistency in a 22-ft. dia. by 40-ft. high density storage tank of tile construction and equipped with agitator, mining nozzles and recirculation system.

New sulfur burner

Sulfur is received in railroad tank cars in molten form and stored in a 350-ton sulfur storage tank of concrete construction and equipped with steam coils to keep the sulfur in a molten condition and at a proper temperature (280° F.) for pumping.

From here, sulfur is pumped by a vertical, glandless, centrifugal-type sulfur pump to a self-atomizing, steam-jacketed sulfur burner capable of burning 15 tons of sulfur per day. The sulfur furnace is a horizontal cylindrical steel shell lined with insulating brick and high temperature fire brick. Air enters the furnace through a brick burner ring surrounding the burner.

The resulting SO_2 gas leaves the furnace through a brick-lined nozzle. It then enters a 3-ft. dia. by 8-ft. high absorption tower where it reacts with a soda ash solution to form sodium sulfite.

New paper machine room equipment

The modernization program involving the three existing paper machines has resulted in the addition of the following equipment:

A new Fibermaster driven by a 200 hp synchronous motor was added to provide better stock control for No. 1 paper machine. Also added to the No. 1 paper machine is a center wind reel featuring secondary transfer arms connected to a common shaft with a belt drive from a dc motor. The secondary arms of this reel are pneumatically positioned and a clutch engages the reel spool with the drive.

Six 9-in. oscillating stainless steel suction boxes were added to No. 2 paper machine to replace the five 12-in. suction boxes. Also added were six new 10-in. separators to replace the five 14-in. separators.

(Continued on page 314.)

A new American paper pulp process

RALPH H. McKEE

PART I — Pulping by the full hydrotropic process

IN THE MAKING of paper pulp from wood, the paper industry in general uses either an acid process, such as the sulfite process, or a modified caustic soda process commonly called the kraft process. There are modifications of these processes, such as the neutral sulfite semichemical (NSSC). The pulps produced are made into paper using among others an acid rosin size and alum. The result is a paper of comparatively short life due to the hydrolysis of alum which liberates acid groups which degrade the cellulose of the sheet.

The sulfite process has a troublesome effluent. It has a further disadvantage because the acid chemicals used act upon the cellulose to cause a loss of about 10 per cent of the cellulose converted by hydrolysis into sugars which are useless in the paper industry. With each of the alkaline processes, of which there are several variations, the alkali under heated conditions destroys a part of the cellulose — the result of which is that again there is a loss of about 10 per cent of the pulp due to the action of the oxygen of the air in the presence of hot alkali.

The hydrotropic process

The new pulping process, called the Hydrotropic Pulping Process, is so named because it uses a hydrotropic solution, a type of chemical solvent discovered about a generation ago but never used industrially. Hydrotropic solutions are those concentrated salt solutions which dissolve more of a slightly soluble material than pure water does. Furthermore, by adding water to a hydrotropic solution of an organic material, such as lignin, the hydrotropic properties of the solution are lost and lignin or other dissolved materials are precipitated.

In the making of paper pulp of standard type, i.e., a readily bleachable pulp, the chips of the wood are pulped in a 30 per cent solution of a hydrotropic salt, such as sodium xylenesulfonate. This treatment dissolves the lignin so that the cellulose can be filtered off, properly washed to remove the residual lignin held by the pulp, and then bleached by the customary bleaching methods used with sulfite pulp or with kraft pulp. The new process gives similar pulps and papers to those now produced industrially.

This hydrotropic chemical is not used up in the process but can be used and reused many times. If to this solution, which has been used say four to six times, water is added at a proper temperature, almost all the lignin precipitates and readily filters off. The filtrate is then evaporated back to its original concentration and can be reused for additional charges of wood chips. From the fact that the chemical is not combined with the lignin but is recovered unchanged from the lignin solution after the precipitation of the lignin this pulping process must be viewed as a catalytic process. The catalyst is a cheap salt such as sodium xylenesulfonate or sodium benzoate or a similar pulping salt of hydrotropic character.

Unlike with the sulfite and kraft processes, it has been found that hardwoods can be pulped fully as well as softwoods. The new hydrotropic pulping process also makes good pulp from straws, bagasse and bamboo.

Generally the pulping solvent is a 25 to 30 per cent solution of the catalyst salt operating at a pH of 3.5, for three hours at 315° F. with ordinary size chips. With some woods, such as members of the bamboo family, the pulping process should be continued for more than three hours, say for four hours, at temperatures of 300° F. to 350° F., depending on the type of paper desired.

In the process, in addition to the hydrolysis from the wood particles of lignin, other materials are also produced. The relief gases from the top of the digester carry — besides steam — furfural, acetic acid, carbon dioxide and in some cases turpentine. These by-products, while largest in the case of hardwoods, are also obtained in appreciable quantity from softwoods and provide additional profits to the industry.

As already stated, with acid sulfite pulping, about one-tenth of the pulp is lost through hydrolysis to glucose by action of the sulfite acid on the cellulose. With the kraft and other alkali processes an equal amount of the cellulose is oxidized by the air in the chips in the presence of the alkaline pulping solvent. With the hydrotropic process the solvent is approximately neutral so that neither of these losses occur, with the result that about one-tenth more pulp is produced for the market.

One of the unexpected results is that the pulp is very low in ash. Even with straws or bamboos which have a high silica content the silica is dissolved and is removed along with the lignin. The pulp will show an ash of only 0.18 per cent of which only a small part is silica. Rosin from pines goes into the solution of the hydrotropic salt but is precipitated with the lignin and does not contaminate the pulp.

Nature and properties of hydrotropic salts

Hydrotropic salts are known in England as "solubilizing salts" and this term of solubilizing is characteristic of their majjor difference from ordinary salts. This group of salts, which is limited in number, is made up of water soluble salts, the concen-

Flow sheet of a new pulping system using the full hydrotropic process.

trated solutions of which have the property, different from that of other salts, of increasing the solubility of slightly soluble substances, particularly organic materials. In general, the solubility of the 25 to 40 per cent salt solutions is increased by 100 to 500 times the solubility of pure water at comparable temperatures. For example, a liter of a 30 per cent solution of sodium xylenesulfonate will dissolve several hundred grams of lignin.

These salts act as catalysts to hydrolyze the wood substances and separate the lignin from the other constituents of the wood. Due to the high solubility of lignin in the cooking solution, we can use and reuse the chemical (generally six times and at least four times) before precipitating the lignin.

It will be recalled that the solubility of lignin in a dilute salt solution of 8 to 10 per cent was such that no substantial amount of lignin dissolved in the cooking solution. This permits (when working with the full hydrotropic process, which is parallel to acid sulfite or the making of bleachable pulp by the kraft process) nearly full precipitation of the lignin from the solution after it has been used four to six times, by simply adding twice its volume of water to the lignin-containing solution — thereby reducing the concentration of the salt to approximately 8 or 10 per cent. The dilution is done preferably with warm water at temperatures of 100 to 150° F. A granular easily washing precipitate of the lignin is obtained. The lignin is filtered off and the filtrate evaporated back to the original strength of the solution, that is by evaporating 2/3 of the volume. The residual filtrate is now at a 30 per cent strength and is ready to be reused for another series of pulping before again precipitating the lignin.

These hydrotropic salt solutions have been mentioned as active chemicals, particularly in pulp making. In general, the speed of pulping with hydrotropic salt solutions is approximately three times as rapid as with the customary methods of pulping at comparable temperatures. This, of course, means that lower pulping temperatures can be used. In general it is advisable to use lower temperatures than are used in kraft or other processes, because of the higher grades of pulp obtained.

Reported advantages of the hydrotropic process

International experts who have had actual experience in the making of paper pulp and paper by the hydrotropic processes have reported on their results as follows:

1. Professor Robert of the French School of Paper Making at Grenoble, France, checked the hydrotropic pulping of broad leaf hardwoods and published an article in Tappi, September, 1955, page 149A. He states "the yield of bleached pulp is higher than any obtained with known procedures. The quality of cellulose is better. The breaking length of the paper made from the pulp reaches 9750 meters". The pulp is very easily bleached and the most conspicuous feature of the pulp is the ease of beating. The burst, tear and fold of the paper produced are excellent.

2. Dr. A. Eymery, also of the French School of Paper Making, Grenoble, France, published in Holzforschung, page 172 (1956), the results of their hydrotropic pulping. They state that the hydrotropic method "is a method which is capable of producing paper pulp of excellent quality by methods more advantageous than present day methods." They also confirm that the lignin obtained by this method of extraction "is very soft and probably very little different from the lignin existing *in situ* in the plant material, in contrast to other lignin which is often completely modified by the customary processes of extraction. The pulping solution can be reused six or seven times for the treatment of fresh chips. The dissolved lignin can be precipitated by simple dilution. This lignin is filtered off and the filtrate concentrated and reused for pulping fresh chips".

3. The Research Department of one of the large mid-west paper companies made comparative pulp and paper runs using the kraft process and hydrotropic process on a broad leaf wood which they were using commercially. The results for burst and fold were excellent by both processes and agreed closely. In other words the hydrotropic and kraft processes gave equally good products.

4. At the New York College of Forestry, Syracuse, Professor Caulfield pulped bagasse and made test sheets of bleached paper for strength and tear by Tappi standard methods. The results for the hydrotropic bagasse pulp were, for Mullen and tear, approximately double that of an "extra strength kraft bagasse paper" made in one of the Government laboratories and published in the Feb. 22, 1945, issue of Paper Trade Journal. Furthermore, the strength and tear were double that of the McGraw-Hill paper such as used by Newsweek, which was the primary wood pulp standard against which comparisons were being made.

5. A shipment of bamboo was brought to the Herty Laboratory, Savannah, Ga., made into bleached pulp and the hydrotropic pulp shipped to English and Scottish paper mills and used commercially for the manufacture of bond papers.

6. A carload of bagasse was brought from Cuba to the Herty Laboratory, at Savannah, Ga., and made into pulp, bleached and made into book type papers, partly alone and partly when mixed with other pulps. These papers were of high grade and entirely satisfactory for industrial uses.

Some disadvantages

The major advantages of the new pulping process have been brought to the reader's attention. It is only fair to ask "what are the disadvantages?" They are:

1. The hydrotropic process requires a better than ordinary scheme for washing the pulp. The new process requires counter-current washing, such as is in use in many of the newer kraft pulping plants.

2. For this counter-current washing, in order to recover the catalyst for re-use, modern screw presses must be used instead of the ordinary rotary filters used in the older pulp mills.

3. The major disadvantage is a mental one in that the paper industry is not familiar with catalysts and does not understand how a neutral catalyst can operate to give good pulps without the use of either strong alkalis or strong acids or a million pounds of water for each ton of unbleached paper produced.

Conclusions

In resume it can be said that for wood, straw or bagasse, the full hydrotropic process (as compared with the kraft or sulfite pulping processes) has the following advantages:

1. Requires only two-thirds the equipment investment of a kraft plant.
2. Requires only two-thirds the mill labor.
3. The cost of chemical "make-up" per ton of pulp produced is much less. At a cost of about 5c a pound of the chemical, it would cost $1.50 a ton of pulp made. The chemical is made in the mill and reused many times.
4. Water consumption is much lower.
5. Hydrotropic pulp bleaches well at less than the chlorine consumption of kraft pulp.
6. From any suitable material the same standard grades of pulp can be made by the hydrotropic

(Continued on page 266)

Lubricants and lubrication equipment in the pulp and paper industry

Part III — Discussion of available lubrication equipment*

A. W. J. DYCK

TREMENDOUS progress has been made in recent years in the development of lubrication equipment—when one considers that only fifty years ago, the only way of applying oil or grease to a bearing was by means of an oil can, or oil and grease cups. This method had the disadvantage of great inefficiency and non-uniformity of lubricant application.

The development of modern lubrication equipment has proceeded towards the realization of the following objectives:

1. Safety to personnel
2. Uninterrupted production
3. Extended machine life
4. Good housekeeping

The first forward step toward new lubrication methods was the development of automatic pressure-feeding grease cups in which a spring exerts a constant pressure on the lubricant in the cup, forcing the lubricant around the screw thread of the resistance pin. The disadvantage of this method is that the constant pressure on the lubricant, and the restricted orifice of the outlet, may cause a separation of the oil from the soap, with the latter eventually clogging the outlet. Most of the pressure-feeding grease cups required the use of special lubricants that were not necessarily best suited for the particular services required.

During the same period, box oilers came into existence which are still being used advantageously in engine room lubrication.

Following this, came the pressure gun and grease fittings which provided a quick and convenient method for delivery of clean grease to a bearing under high pressure, at the same time flushing out some of the old lubricant.

As machines became more complicated, requiring as many as 70 to 80 grease fittings or nipples, it became necessary to group these nipples at easily accessible central stations and running individual tubes from each fitting to a bearing.

Even this method did not provide adequate control over the quantity of lubricant to be delivered; neither gave it the assurance that every bearing had been lubricated.

Centralized lubrication system

As a next development in lubrication equipment, came the centralized lubricating systems which may be grouped into four basic systems:

1. The single line system, consisting of a reservoir, a pump, a three-way valve and a series of spring-operated measuring valves connected to a common supply line. When pressure is applied by the pump, a known quantity of lubricant is forced out of the measuring valves which are subsequently refilled when the pressure drops.
2. The non-reversing progressive system consisting of a reservoir, a pump, a main supply line and the measuring non-adjustable valve manifold. This system uses the divisional principle to divide the delivery from the pump into several bearing outlets. It is a continuous cycling mechanism which continues to operate as long as there is flow from the pump.
3. The loop system, consisting of a reservoir, a pump, a four-way valve, a main supply line and a series of measuring valves inserted in the main supply line, operates on the principle of reversible flow in the main supply line.

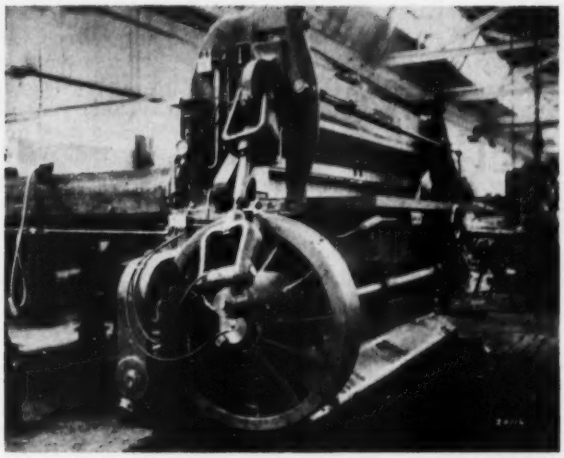
   The measuring valves are progressive and non-adjustable with indicators at the end of the loop. Pumping is continued until all measuring valves have operated and the flow of lubricant reaches the central pumping unit to operate an indicator and thereby completing one cycle of lubrication.
4. The dualine system, which consists of a pump, a four-way valve, a dual main line piping to which all measuring valves are attached, is designed for alternating pressure applications in two main supply lines. The measuring valves operate independently and offer indication and adjustment for each bearing.

The centralized lubricating system provides for practically unlimited possibilities in layout and design to meet specific conditions. It can be made to operate manually where infrequent lubrication is required, such as once every four hours for instance, or where frequent lubrication is required, it can be made to operate automatically with time clock control.

Centralized lubrication may also include multiple measuring valve blocks

* The author gratefully acknowledges the contributions made to this article by G. E. Gesdorf, The Farval Corp., and L. B. Ward, Beloit Iron Works.

A modern dryer roll bearing lubricated by a circulating oil system.



A manually operated lubricating system on a Harris-Seybold trimmer.

used with portable grease guns to serve a limited number of bearings.

Circulating oil systems

The circulating oil system is used on paper machines where oil lubrication is required under controlled pressure and in sufficient volume to flood the bearings continually. Although there are two types of circulating oil systems, i.e. the gravity feed and the pressure feed, it is the pressure feed system which is used in most paper mills today.

This pressure feed system involves the use of oil storage and water settling tanks, two pumps (one used as a standby), a dual oil filter, a cooling system, sight glasses or proximity switches to indicate the flow of oil, and alarm and control systems. The pump forces the oil to the bearings. The oil then returns to the oil tanks by gravity, via a cooling system. Pressure in the system is controlled by the use of relief valves or orifices.

Since a modern paper machine — from the headbox to the winder — has over 1500 antifriction bearings costing about $250,000, it is not surprising that the circulation oil system has become a must on all paper machines. The importance of good lubrication may be further emphasized when one considers that the cost of a single dryer bearing amounts to $500 — while a supercalender bearing may cost as much as $5,000 to $6,000.

Some of the outstanding advantages of the modern circulating oil systems are:

1. Continuous flushing of all bearings with clean lubricant.
2. Warning protection is provided so that the equipment shuts itself off automatically under conditions of high pressure build up or complete loss of pressure.
3. Every metering valve is equipped with indicators so that trouble is located immediately.
4. The dual filter arrangement permits changing of filters without shutting down the machine.

The two principal manufacturers of circulating oil systems for the paper industry are Bowser Corp. and Beloit Iron Works. A few installations were also supplied by Dravco and Nugent.

The capacity of the oil reservoir in the circulating system (especially when used on the dryer section) should be large enough so that its retention time in the reservoir is not less than 30 to 45 min., depending on the type of circulating system used. If the reservoir is too small, the oil will be exposed to the high temperature of the bearings at too frequent intervals with little opportunity for water and insoluble impurities to settle out for automatic removal. In most conventional systems, the oil reservoir holds an 80-min. supply of oil.

As a basic rule, the circulating oil systems are designed to deliver:

1. 1 quart per minute to each antifriction dryer bearing.
2. 1 pint per minute to each plain dryer bearing.
3. 1 pint per minute to each dryer gear idler support bearing.
4. 1 quart per minute to each gear application point.
5. 1 gallon per minute to each Yankee dryer antifriction bearing.

The bottom of the oil reservoir is sloped, about 1 in./ft., toward the drain connection located at the low point.

The return piping of the oil system must be of sufficient size to comfortably handle the flow of oil from each bearing and to permit it to flow freely by gravity to the main reservoir. Return piping should be of such size that it never runs more than half full when in continuous operation. The excessively large size is necessary to handle the cold oil after week-end shut-downs when its viscosity is high and there is danger of plugging the return piping.

The system also includes high and low oil-level alarms and pressure differential alarms, to indicate failure of the oil pump or its drive.

In addition to gravity settling employed in the continuous purification of oil used in the circulating oil system, centrifuges may be used to separate the heavier-than-oil material such as water and coarse solids. These centrifuges rotate at 7,000 to 15,000 rpm.

All modern circulating oil systems used in the paper industry feature oil filters that remove oil contaminants. These can be grouped into two main classes: (1) the size filters and (2) the absorbent filters.

The size filters may be sub-divided into (1) surface-type filters in which oil flows through the openings of a closely woven fabric or cellulose sheet; (2) edge-type filters in which oil flows radially through the spaces between washer-shaped cellulose discs; and (3) depth-type filters in which oil flows through a relatively thick layer of material such as waste, cellulose fiber, or felt. Certain filters, known as polishing filters, can remove particles down to 0.00002 in.

Absorbent filters contain a finely divided material such as activated clay

or a natural clay, such as fullers earth, in the form of a bed or of renewable cartridges.

Effective ventilation of the circulating oil system and the oil reservoir is recommended to keep water contamination and rusting to a minimum. Ventilation removes humid air from the system and thereby prevents moisture condensation on the cool metal surfaces. Ventilation also keeps the humidity above the oil reservoir at a low level and thereby increases the rate of evaporation of any water that might contaminate the oil.

The Beloit roll filter

In the Bowser circulating oil system, widely in use today because of its excellent performance on the paper machine, an 80-gal.-per-minute system, requiring 125 filter bags, is 8 ft. wide and 75 ft. long.

Prompted largely by the thought of saving space, Beloit Iron Works has recently developed a roll-filter that requires an area of not more than 10 ft. by 20 ft. to house a 100-gal.-per-minute system. The roll-filter consists of a filter tank which contains a drum, approximately 36 in. in diameter, mounted in antifriction bearings. One end of the drum is solid, while the other end has several openings. The open end of the drum is sealed to the side of the tank by a garter strap arrangement. The filter drums come in standard diameter size, only the length of the drum being changed to vary filtering capacity.

The face of the drum is covered with a fine mesh screen, supported by heavy expanded metal mesh. A continuous, removable-type filter cloth, which fits over the drum, serves as a filter medium.

In paper mill installations the roller filter is usually mounted on the combination clean oil storage and water settling tank. Integral parts of the system are: (1) a dual pump arrangement; (2) a small pressure tank that acts as an "air cushion" to protect the gauges and pressure switches from pump pulsations; and (3) a simple, effective alarm and control system.

Another feature that distinguishes the Beloit lubrication system from the Bowser system, is the filtration and settling sequence. While in the Bowser system, the used oil is permitted to settle before it enters the filter bags, in the Beloit system the dirty oil first flows through the filter cloth into the drum and then out of the open end into the storage tank, which has sufficient capacity for an oil retention time of 20 to 30 min. to permit the separation of small droplets of water from the oil. This arrangement has the advantage of keeping the storage tank clean.

The storage tank equipped with a floating pump-outlet has the usual sloping floor to facilitate water drainage. Underneath the floor are steam heating coils controlled by a thermostatically-operated steam regulator for proper temperature control.

The pumps supply oil pressure of 39 psi. A double pole, double throw, cross-over switch permits the interchange of pumps without changing pressure switch settings.

Another advantage of the system is that the initial oil cost is held to a minimum. A 100-gal.-per-min. system would need approximately 3,500 gal. of oil.

Mist or fog-lubrication

Ideal lubrication is obtained when the bearings receive just enough oil to wet the surfaces, since excess oil has the tendency to retard the speed and generate heat due to a churning action.

A system to provide just enough lubricant is the mist or micro-fog system. This system has recently been tested with very good results on the anti-friction bearing of a paper machine.

Micro-fog is formed by injecting air into a stream of low pressure (60 psi) filtered air. Since the oil particles are of the micronic size (2 to 3 microns), the fog thus formed is dry and can be conveyed through an elaborate piping system to the machine bearings without the danger of in-pipe condensation.

It is therefore necessary to convert the dry fog into wet fog in the bearings. This is accomplished by means of reclassifiers installed at each lubrication point. In the reclassifier the micro-size droplets are converted into large enough oil particles to wet the surface.

Among the advantages of mist or micro-fog lubrication are:

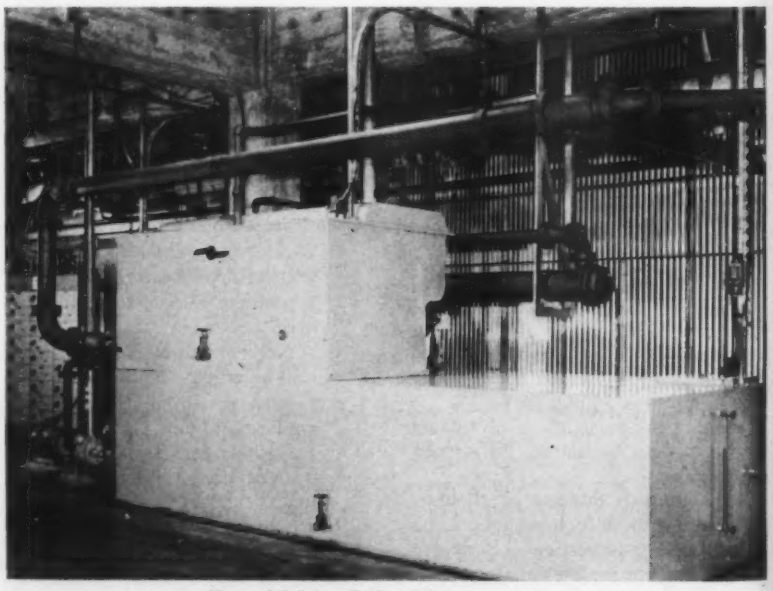
1. No evidence of oil oxidation on the bearings—both bearing surface and oil film remain fresh and clear.
2. Bearing temperature is reduced by 8 to 10° F.
3. Consistent and uniform delivery of oil throughout the bearing system.
4. Greater economy of lubricant consumption.
5. Ease of installation and operation.

In a typical micro-fog lubrication system, each lubro-control unit lubricates all bearings on one side of the machine by means of vertical and horizontal 2-in. manifolds which connect to the bearings by way of ¼ in. tubing. In addition, the two systems are connected with a 2-in. pipe as a safety measure so that each unit can supply lubricant to the whole machine in case of a breakdown in one unit.

Among the limiting factors in this type of lubrication system are:

1. The lubricants cannot have a higher viscosity than 1000 sec. at 100° F.

(Continued on page 266.)



View of Beloit roll filter lubrication system.

Establishing standard procedure for the operation of a maintenance control program

(Continued from the June issue)

BERT CARSON
Maintenance Planning Supervisor
Hudson Pulp & Paper Corp.

Shutdown scheduling

This procedure should instruct in the preparation of and methods to be used in scheduling extended shutdown repairs. It should establish policy for:

1. Arriving at the length of the shutdown.
2. The maximum deadline for the maintenance control department to accept additional jobs to be added to the shutdown without the approval of the general superintendent.
3. The course of action, when necessary work is discovered after the shutdown is in progress.

The form should be of the bar type or similar, providing for:

1. Hour by hour scheduling of each job order.
2. Depicting the main and all assisting trades.
3. Indicating the time for starting and finishing each job.

Preventive maintenance and oiling and lubrication control

This procedure should provide instruction to properly refer each auxiliary piece of equipment to its major counterpart. This is preparatory to the setting up of the preventive maintenance and oiling and lubrication program.

The information shown on the form should be the basis for aligning the preventive maintenance and oiling and lubrication inspection route.

Preventive maintenance control record

This procedure should provide method and instruction for the preparation and use of the records card. This card should be the base card for controlling and recording both the preventive maintenance and the oiling and lubrication inspection. Each inspection should be spelled out and the frequency of inspection stated. Upon completion of each inspection, the information shown on the inspection reports should be posted to this form, and the signal set to flag the next inspection.

Preventive maintenance inspection report

This procedure should provide instructions for the preparation of the form and performance of the inspection. A separate form should be used for each group of inspections of like frequencies.

The information from this form should be posted to the preventive maintenance inspection control card for records. If a written job order results from an inspection, the job order number should be posted to the records card. Any written job order originating from a preventive maintenance inspection should be completed prior to the next inspection.

Oiling and lubrication inspection report

The procedure should provide instruction for the preparation of the form and performance of the inspection. These forms should be issued by control centers for groups of equipment of like frequencies. The information from this form should be posted to the preventive maintenance inspection card.

This procedure should include a lubrication code for denoting type lubricants.

Traveling purchase requisition

This procedure should provide instruction for the preparation and use of the traveling purchase requisition.

The purpose of the procedure is to:

1. Eliminate the paper work involved in writing a special purchase requisition for repeat items.
2. Provide instruction for the automatic re-order of these parts and supplies, based on a calculated minimum and maximum amount to be stocked.

The minimum and maximum amounts shown on the traveling purchase requisition should be based on past experience.

Maintenance stock records card

This procedure should provide instruction for the preparation of the form and maintaining the experience record of each part or supply in the stored stock category.

This form is the companion card to the traveling purchase requisition and should indicate by use of a flag when the traveling purchase requisition is out for re-order.

Special purchase request

This procedure should provide instruction for initiating and policing the special purchase request. No item purchased on this request should be added to stored stock without written authority. A time limit for allowing a purchase of this nature to remain in stores inventory should be established as policy. The purpose of this procedure is to establish method for controlling these purchases.

Maintenance request for stored stock

This procedure should provide instruction for the preparation of and method for obtaining approval to add new parts or supplies to the maintenance stored stock inventory.

The purpose of this proceduce is to:

1. Control maintenance additions to stores stock.
2. Maintain a live-stored-stock inventory.

The procedure should request a valid reason for addition to this inventory and the approval of no less personage than the chief engineer.

Maintenance request to delete from stored stock

This procedure should provide method and instruction for deleting from the maintenance stored stock inventory:

1. Antiquated parts and supplies.
2. Parts and supplies which have been stocked for a piece of equipment that has been either scrapped or sold.

The removal of an item from stored stock inventory should require a valid reason and instructions for disposal of any stock on hand. When an item of equipment is sold, the

spare parts on hand should be included in the sale.

Supplies withdrawal requisition

This procedure should instruct in the method and use of the supply requisition for:

1. Withdrawal of parts and supplies from the mill storeroom.
2. Accounting for the cost of these items by individual unit of equipment or job order.

The source document for the costing information asked for on this form should appear on the job order.

Return to stores for credit

This procedure should instruct in the preparation and use of the return to stores for credit requisition.

The procedure should state that any supplies or parts remaining from a specific job order should be credited to that order. For parts or supplies salvaged by maintenance, maintenance overhead should be debited with the cost of salvage and credited with the purchase price.

Maintenance stock count

This procedure should provide method and instruction for inventorying and reporting maintenance parts and supplies in the storeroom stock.

The inventory should be checked by and posted to the stock records card. The procedure should establish that the maintenance stores inventory will be a perpetual inventory.

Receiving maintenance purchases

This procedure should provide instruction in the method for receiving parts and supplies for both maintenance stored stock and maintenance special purchased items. It should provide that the maintenance scheduler be notified of receipt of all items bought on a special purchase request that the work may be scheduled.

Equipment record card

This procedure should provide method and instruction for preparing and maintaining a records card for each piece of coded equipment, depicting the history and cost of maintenance upkeep. The value of the equipment and its purchase date should be shown. The value of the equipment as opposed to its upkeep will indicate any excessive maintenance.

When excessive maintenance is apparent, a request should be made to the engineering department for a check and suggested corrections.

Stop major maintenance

This procedure should provide method and instruction for stopping major maintenance to a piece of equipment when:

1. The maintenance costs have been excessive and the equipment is under engineering study.
2. An alteration or replacement is contemplated.

This procedure should in no way restrict minor repairs or preventive maintenance, as long as the equipment is in line of production.

New work project control

This procedure should provide method and instruction for the control and reporting of the status of new work projects.

It should outline in detail:

1. The method to be used for arriving at the total estimated expenditure.
2. Instructions for recording.
   a. Written job orders
   b. Purchase orders
   c. Receiving tickets
3. Instructions for reporting the status of all new work projects once each month.

Maintenance backlog report

This procedure should provide method and instructions for compiling, preparing, and publishing a semimonthly backlog report. The report should be compiled by trade, and depict the estimated hours in the active backlog by department.

The procedure should instruct that these hours be compared to manpower available for scheduling, and show estimated crew days.

Maintenance manpower report

This procedure should provide method and instructions for compiling, preparing, and publishing a semimonthly manpower report. The report should be compiled by trade, stating:

1. The approved crew size.
2. Size of the actual crew for the past two week period.
3. Variance from approved crew.
4. Names of temporary helpers and crews to which assigned.

Maintenance costs vs. production report

This procedure should provide method and instruction for analyzing the monthly maintenance expenditure.

The purpose of this report is to summarize the monthly expenditure by control center for the type work done, ie.,

1. New work capital.
2. Shutdown, repairs.
3. Regular maintenance.
4. Insurance claims.

The shutdown and regular maintenance expenditures should be broken down by type product produced, and a maintenance cost per unit of production compiled for each. Any cause for an unfavorable variance should be explained by control center.

Graphs depicting trends

This procedure should outline in detail the method and instructions for publishing once each month graphs depicting the following trends:

1. Estimated manhours in the maintenance backlog by trade.
2. Product output by type product.
3. Maintenance cost per unit produced.
4. Total maintenance expenditure by type work.
5. Cost of parts and supplies by type work.
6. Manhours expended by type work.
7. Cost of labor by type work.
8. Shutdown and regular maintenance repair cost by control center.

Conclusion

The control program described herein is comparatively simple to operate once every phase is clearly understood, however, designing and instituting such a program is not the job for an inexperienced engineer. The effectiveness of the system and the efficiency with which it serves depends largely on the manner and methods used in the initial installation. The design of the forms should come first. Good filing equipment, placed in a well lighted, well ventilated office also means much.

The use of written procedures will eliminate any misunderstanding of verbal orders. They will clearly and definitely establish duties and responsibilities and insure uniform practices throughout the plant. They will also facilitate the training of new employees and simplify the temporary assignment of duties during the absence of key personnel. Standard procedure instructions should be issued:

a. To epitomize a standard policy.
b. To epitomize procedures

The procedure manuals should consist of instructions for handling the various departments, such as those covered in this paper. They should describe the duties, functions, authority and responsibilities of each key position and department in the company.

The establishing of standard procedure instructions is of major importance. They should be carefully and intelligently prepared. They should be kept brief, yet concise. The introductory paragraph of each procedure should clearly state the purpose and intent. Each procedure should be numbered and any form which is a part of a procedure should carry the same number.

41st Annual PIMA Conference

A LARGE attendance of nearly 700 registrants marked the 41st Annual PIMA Conference held at the St. Francis Hotel, San Francisco, California, on June 7-9.

The conference was officially opened by PIMA's president, A. C. McCorry, St. Regis Paper Company. Following the opening of the business meeting, James F. Miller, Vice President and Director of Blyth and Company, presented a number of challenging problems that will continue to face management of the pulp and paper industry:

1. Continued effort toward cost reduction, as a result of introducing new techniques and replacement of obsolete equipment.
2. Research toward the development of new products and new combinations with existing competitive materials.
3. Great care in the planning of expansions, in production and analysis of marked demand.
4. Greater efforts in increasing exports.
5. Intelligent studies for possible benefits in integration.
6. Statesmanship in pricing, so that paper securities may regain the favor of large investors.

Also announced by Harry Weston, PIMA's Secretary-Treasurer, during the business meeting were the ten winners of the 13th Bolton Award Contest. The names of these winners are reported elsewhere in this issue.

Guest speaker at the Industrial Affiliates Recognition Luncheon was W. R. Adams, President of St. Regis Paper Company.

New officers

The 1960-61 PIMA officers are: President, Tom S. Coldewey, St. Joe Paper Co.; 1st Vice President, C. Ives Gehring, Sealright-Oswego Falls Corp.; 2nd Vice President, Bemis P. Wood, Strathmore Paper Co.; 3rd Vice President, Glen T. Renegar, Container Corp. of America; 4th Vice President, Lawrence W. Murtfeldt, Consolidated Water Power & Paper Co.; 5th Vice President, Robert O. Stephenson, The Champion Paper & Fibre Co.

New members of the Board of Directors are: Donald R. Dick, Howard Smith Paper Mills Ltd., and Gordon K. Singletary, Brunswick Pulp and Paper Co.

Olin Callighan, Minerals and Chemicals Corporation of America, was appointed a new trustee of PIMA at a meeting of the Board of Directors.

Tom S. Coldewey of Port St. Joe, Fla., Vice President in Charge of Operations of St. Joe Paper Company, was installed as President of the Paper Industry Management Association at the association's national meeting here today.

The new president, who also is a member of the Board of Directors of St. Joe Paper Company, has been a vice-president, director and member of the executive committee of the Association since 1955. He served as chairman of the Southern Division in 1953.

Mr. Coldewey has been associated with St. Joe Paper Company since 1937 and has been employed in all departments of the company's kraft containerboard mill in Port St. Joe. He was maintenance superintendent, assistant general superintendent, construction engineer in charge of the company's mill expansion program and assistant vice-president in charge of construction and operations before he was advanced to his present position.

A graduate of the University of Cincinnati, where he earned a degree in mechanical engineering, he is a member of the American Society of Mechanical Engineers.

General conference

William D. Hagenstein, Industrial Forestry Association, discussed the tree improvement possibilities through application of principles of genetics as undertaken at a number of the Association's seed orchards. The Association now has some 152 trees which can be designated as plus trees, he said. In seven years' time, the Association will have all the seed of superior quality needed for its nursery that grows some 10,000,000 trees annually.

Eugene G. Ingalls, Fiberboard Paper Products Company, introduced a new standard of production known as the "High Standard." It is a novel concept in which performance is compared with the ultimate achievable potential and not with past experience. Under this scheme, the performance of a machine is compared with what it should produce and not what it produced a year ago. The use of the "High Standard" method may lead us much closer to the theoretical performance of 100 per cent, he said.

Boyce Hubin, General Electric Company, discussed personnel devel-

opment and warned against such fallacies in our thinking as "If it makes sense to me it's a fact, if it doesn't it's a fallacy" and "No activity is worthwhile unless it can be measured in dollars and cents."

Among the approaches to personnel development he listed:

(1) The "do nothing" approach, which is based on the cliché "The cream will always rise to the top."

(2) The "mechanical program" approach which stipulates that competent management can always be produced on schedule from so much human material.

(3) The "motivational" approach, which demands a managerial climate for the development of good managerial qualities.

A managerial climate is reflected by such characteristics as:

(1) Recognition of achievements;

(2) Delegation of responsibilities; and

(3) Democracy in decision making.

Chips

Discussing the economics of chips, Charles E. Young of Weyerhaeuser Company pointed out that the use of saw mill chips:

(1) Extends the supply of available wood for the mills at lower wood cost;

(2) Constitutes a source of profit to the saw mills;

(3) Has attracted new pulp and paper mills or led to expansion and integration of saw mills and pulp mills in certain areas; and

(4) Is equivalent to the addition of thousands of acres of well-stocked forest lands and has reduced premature cuttings of certain areas.

Owen W. Bentley, Crown-Zellerbach Corporation, stressed the need for standards in both chip size and quality as well as the use of standard equipment in chip handling and transportation. Uniform chip size enables the company to use such chips in all mills and for all purposes, he said.

Important is also the segregation of chips as to species. The mills now pay the highest prices for Hemlock chips and lowest prices for Douglas Fir chips. Mixed chips are bought at Douglas Fir prices.

The company is now buying all chips on an oven-dry weight basis. Buying chips on a weight basis has the advantage of encouraging maximum capacity loadings of cars or trucks. A railroad car for instance can hold 30 per cent more chips if the latter are blown into it instead of loaded by gravity.

John W. Lehman, Tennessee Valley Authority, discussed chip production from saw mill leftovers in the south and said that the chips used from this source amounted to 2,189,637 in 1959 cords and cost $32,000,000. This quantity of chips accounted for 10 per cent of the mills' wood fiber consumption in that year.

Availability of improved barking and chipping equipment now enables a saw mill with an output of 10,000 board feet per day to produce chips at a profit of $34.90 per day. The minimum cost of debarking and chipping equipment was estimated by Mr. Lehman at $30,000.

Chlorine dioxide bleaching

Donald T. Keller, Potlatch Forests, Inc., and W. C. Christiani, Dorr-Oliver Inc., described the installation and design of a 78 ft. high ClO_2 bleach tower that could handle 700 tons of pulp per day at a retention time of 5 hrs. A conventional design of such a tower would have required it to be 130 ft. high at a diameter of 20 ft., would have been very costly, and might have presented additional problems of maintaining uniform flow characteristics through the tower.

The new design which went into operation in November, 1959, has a 65-ft. high, 3-ft. dia. upflow center tower which provides a full hour's retention at the 700 ton/day rate.

A novel plumbbob distributing device equipped with two swept-back arms and center cone scrapes the high density pulp off the top of the upflow section and distributes it uniformly into the 30-ft. dia. outer tower which provides a full 4 hr. retention time in the downflow section above the dilution zone.

The bottom of the tower is equipped with 10 standard stainless steel dilution nozzles and circulators equipped with stainless steel blades for thorough repulping.

As a measure of the efficiency of this system, the pulp emerges with a G.E. brightness of more than 86, while the total daily cost of bleaching chemicals has been reduced by $350.

The tunnel barker

A. P. Schnyder, the Lummus Company, described a new barking concept, the tunnel barker. The tunnel barker includes working parts of the conventional trunion type barking drum. However, the revolving drum proper is replaced with an "open" scroll. The logs are fed into the tunnel by overspeed rolls. Barking action is predominantly by friction as well as by some impact against the concrete tunnel walls. The logs are pushed through the tunnel by triangular pusher elements attached to the scroll.

Among the advantages claimed for the tunnel barker are:

(1) It can be installed at a cost of 70 to 80 per cent of the cost of the conventional drum barker;

(2) It has a minimum fiber loss of 0 to .5 per cent as compared to a fiber loss of 2 to 4 per cent for a drum barker; and

(3) A low power consumption.

Converting

Papers presented at the converting session were: "Challenges and Opportunities Ahead in Packaging," by Lloyd Stouffer, Modern Packaging; "The Paper Industry—Count Down and Blast Off for the Orbiting Sixties," by James Goff, Michigan State University; and "How Can We Meet Competition of Non-Fibrous Packaging Materials," by Richard Porter, Paperboard Packaging.

Fine papers

In the Fine Papers session, the topics discussed dealt with: "Reproduction Papers," by B. Friedland, Eugene Dietzgen Co.; "Control of Radioactive Contamination" by Ralph W. Peters and Harold W. Crouch, Eastman Kodak Co.; and "Dryer Felts and Air Currents" by William K. Metcalfe, J. O. Ross Engineering Div.

Mr. Metcalfe said that progressively less air has been needed for moisture removal from the dryer section with the change from no hoods to open hoods to totally enclosed hoods. In connection with the application of dryer felts, he listed such factors as cross migration, effect of air injection, felt drying apparatus, and natural convection air currents as those that markedly influence the drying process.

Paperboard

Papers presented at the Paperboard session were: (1) "Consistency of Stock in Primary and Secondary Headboxes of Fourdrinier Section and Its Influence in Formation of the Web," by J. H. Quigley, Crown Zellerbach Corporation; (2) "Water Removal by Forming Board and Table Rolls, Etc.," by Sydney T. Dolan, St. Regis Paper Co.; (3) "Water Removal by Suction Boxes, Traveling Suction Belts and Couch," by Delos Wilma, Longview Fibre Co.; (4) "Proper Function of Counter-Flow and Uni-Flow Vat in a Multi-Cylinder Paper Machine," by W. H. Richards and Fred P. Ritchie, Container Corporation of America; (5) "Function of Presses on Cylinder Machine Between Last Cylinder and Dryers, etc.," by E. L. Lukemire and John Van Ounsem, The Flintkote Company; (6) "Future of Cylinder Machine, etc.," by Dr. R. W. K. Ulm, Fibreboard Paper Products Corporation.

TAPPI's 11th Coating Congress

TAPPI'S 11th Coating Conference held at the Edgewater Beach Hotel in Chicago, May 23-25, attracted 956 registrants, thus exceeding last year's registration by more than 150 people.

R. W. Hagemeyer of Wyandotte Chemicals Corporation was General Chairman of the Conference, while R. W. Martinek of Kimberly-Clark Corporation, was Program Chairman. W. E. Welliver, Minerals & Chemicals Corporation, was Publicity Chairman and C. W. Cairns, Dow Chemical Co., was Local Arrangements Chairman. Speaker at the annual luncheon was Bert Cremers of Wyandotte Chemicals Corporation.

New surface sizing technique

B. A. Beardwood and E. P. Czerwin, E. I. du Pont de Nemours and Company, described a new two-stage sizing technique which uses a pretreatment of the paper sheet with a borax solution followed by sizing with polyvinyl alcohol. This technique prevents excessive penetration of the size into the sheet, thereby markedly reducing the consumption of polyvinyl alcohol. Subsequent experiments have shown that the new sizing technique results in excellent resistance to mineral oil penetration and improved resistance to turpentine penetration. In general, such papers show superior oil hold-out and are comparable in all other properties with papers subjected to conventional sizing techniques.

R. W. Hagemeyer
Conference Chairman

Adhesive concentration and printed gloss

R. E. Weber, Kimberly-Clark Corporation, showed that printed gloss and oil hold-out are improved with increased adhesive concentrations. Maximum printed gloss values were reached 36 and 45 per cent of adhesive concentration in pigment mixtures that contained hydroxyethylated starch, soy protein, and white dextrin respectively. The calendered paper gloss values on the other hand were found to decrease at increased adhesive concentrations, with minimum gloss values shown at adhesive concentrations which yielded maximum printed gloss values.

Electrostatic coating of paper

An electrostatic coating technique as used at Brown-Bridge Mills, Inc., was described in a paper by F. W. Holt, Brown-Bridge Mills, Inc., C. Lorenz, Black-Clawson Company, Dilts Division, and R. B. Reif, Battelle Memorial Institute. The coating, consisting of a water-soluble adhesive and a flexible binder material, is used as a dry powder suspended in an air stream, electrically charged, and deposited on the sheet by electrostatic forces.

The equipment for this technique was developed in co-operation with Battelle Memorial Institute and Black-Clawson Company. It consists of a 60-inch coater and complete grinding facilities. The coater is designed to apply 15 pounds coating at speeds up to 300 fpm. It is equipped with plastic hood cover and 0.010 inch wires to produce corona for charging and depositing the powders.

The powders are ground on a fine grinder which pulverizes them to the 1-50 micron particle size.

Method to determine wet rub resistance

F. R. Adams, Jr., International Paper Company, described a new design of wet rub resistance measuring equipment which essentially consists or a rubber covered roll running partially submerged in a pan of water. The sample is mounted on a steel roll which rides freely on the rubber roll. Following a specified period of wet abrasion of the mounted sample, the water in the pan is poured through a filter and the abraded material weighed. The gain in weight represents the loss of the coating and serves as a measure of wet rub resistance.

Operating variables of a blade coater

W. J. Follette and R. W. Fowells, Crown-Zellerbach Corporation, showed that coating weight varies as a function of doctor blade pressure and presented a simple method for calculating blade pressure as follows:

$$W = \frac{B}{P^A}$$

(Continued on page 266.)

Bert Cremer
Luncheon Speaker

Hydrotropic pulp

(Continued from page 257.)

process. For such types of pulp the yield is markedly increased and the cost per ton lessened by the hydrotropic process, as there is no destruction of cellulose by oxidation or by hydrolysis. This holds for softwoods, hardwoods, bagasse, straws, etc.

7. There are by-products such as furfural, lignin, acetic acid from hardwoods which in most areas have profitable markets — amounting to half the income from the pulp.
8. Can be operated as a continuous process, as it uses a rapid pulping agent. There is no need to slowly pre-heat contents of the digester.
9. Operates on both softwoods and hardwoods equally well. This permits desired mixtures of softwood chips and hardwood chips to be successfully pulped together — a step not practical with any other pulping process.
10. The process is well protected by patents, not only in the United States but in other counttries where cellulosic raw materials are available. Licenses to use the McKee hydrotropic process are available on reasonable terms.
11. Last but not least, the process is free from objectionable odors or aqueous effluent and is profitable.

It may be observed that high claims have been made for these new hydrotropic processes for cellulose pulp manufacture. However, those familiar with the hydrotropic processes believe such claims to be fully merited.

Lubrication equipment

(Continued from page 260.)

2. Excessive moisture in the compressed air system can cause trouble.

Many successful oil fog installations have been made during the past ten years. The present-day oil fog lubricators have been designed to produce a mist of 2 to 5 micron oil particle size. An oil fog lubrication installation of the latest design is that now in operation at St. Regis' Pensacola Mill.

Spray lubrication of open gears

While the modern industrial trend is toward using enclosed gears which are either splash-lubricated or circulation-oil-lubricated, there are still a great number of open gear installations in continued use in the pulp and paper manufacturing industry. This is dictated by both economical and practical considerations. Instances where open gears are still in evidence are:

1. Old paper machines
2. Kilns
3. Turn tables
4. Rotary tables
5. Presses
6. Conveyors, etc.

In the past, these gears were lubricated by swabbing, brushing, pouring, dipping and dripping which entailed such disadvantages as throw-off, drippage, lack of uniform distribution, excessive oil consumption and expensive cleanup and waste of labor.

In line with recent progress, manufacturers of centralized lubricating systems have developed automatic and semi-automatic gear spray systems which have received wide acceptance in the pulp and paper industry.

In this system the lubricant is fed to a spray control valve. The flow of lubricant moves a central piston, opening an outlet port to the nozzle. At the same time, a check ball is unseated permitting a flow of air to the nozzle. After a measured quantity of spray is discharged from the nozzle, the system automatically shuts itself off until the next lubricating cycle.

TAPPI coatings

(Continued from page 265.)

Where W equals coating weight; P equals applied blade pressure; A and B are constants which have to be determined.

Some of the results obtained by the authors show that the value of A increases with increasing viscosity while B may increase or decrease depending on the absorbency of the sheet and the net effect of applied blade pressure and the hydrodynamic pressure.

A and B increase with increasing color solids.

A appears to decrease slightly and B to increase as absorbency and roughness increase.

A and B increase as the angle of the coating blade to the tangent of the backing roll decreases.

The Champflex coater

C. G. Whelpton, Champion Paper & Fibre Company, described a new coater which, while basically a trailing blade coater, incorporates the characteristic feature of using a small rotating rod at the edge of the blade. The rod rotates against the direction of sheet travel and has the ability of doctoring coatings without encouraging the foreign particles to lodge behind the blade to cause streaks. The coater is relatively easy to operate, fairly inexpensive to build, and permits simple coating preparation and handling techniques. A single coating application can apply a weight of from 3 to 15 pounds per ream per side at solids ranging up to 65 per cent.

X-ray technique for measurement of coating thickness

H. H. Murray, Georgia Kaolin Company, and W. D. Johns, Washington University, described an X-ray absorption technique for measuring thicknesses of inorganic coating layers with an accuracy of $\pm$ 0.5 microns.

The method is simple, requiring an X-ray tube with proper shielding devices and collimators for on-the-machine control of coating thickness and weight.

Pressure cooking for coating color preparation

W. C. Black and V. L. Winfrey, Penick & Ford, Ltd. Inc., described equipment which is now available for continuously cooking starches at elevated temperatures and pressures.

The equipment consists essentially of a pump for forcing the starch slurry through the unit, a cooking chamber for mixing steam with the slurry and a valve system for controlling the chamber pressure and temperature.

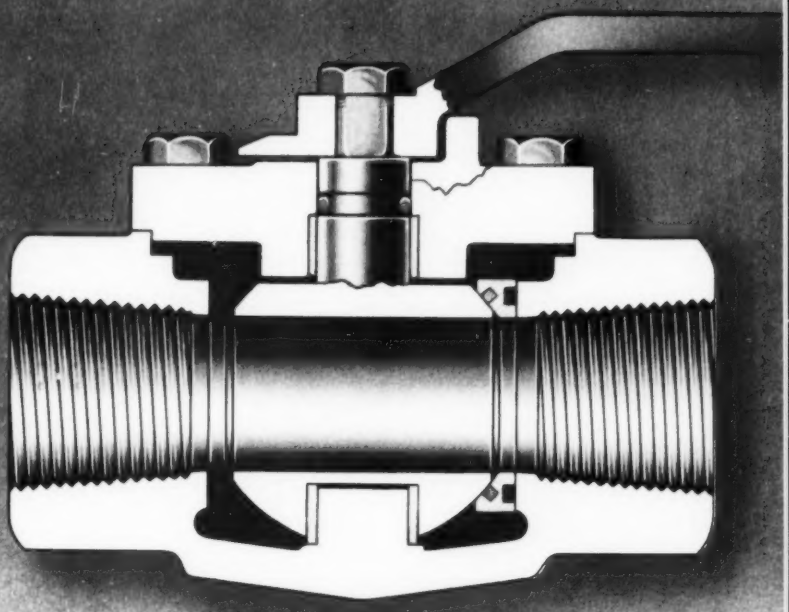
A series of nozzles in the chamber insure intimate contact of steam and slurry.

A proper selection of pump speeds and sizes makes it possible to prepare starches over a wide range of concentrations and flow rates with a single unit.

Other papers

Among other papers at the meetings were: "Coating Polymers for Paper Products," by W. L. Boyer, Firestone Plastics Co.; "The Effect of Mixing Intensity on the Dispersion of Coating Pigments in Water," by N. Millman and J. B. Whitley, J. M. Huber Corporation; "Design and Operation of a Pilot Plant Coater," by E. D. Jones, Crossett Paper Mills and N. H. Laughrey, Black-Clawson Company, Dilts Division; "A Laboratory Instrument for Measuring the Piling Propensity of Papers Used in Offset Lithography," by F. F. Oehme and D. C. Nepper.

...how can 1 valve replace 3?



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but, unlike gates, the *FLO•BALL* valve doesn't freeze or jam . . . it never leaks . . . the seats don't score . . . it requires no maintenance . . . and just a ¼ turn opens or closes it.

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but, unlike globes, *FLO•BALL* gives zero leakage . . . in both directions *without* seat distortion . . . closes easily without massive operators . . . gives more than twice the flow . . . and the fastest action of any valve made.

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I now use ball valves in these sizes_____.

PLEASE: ☐ Have salesman call ☐ Send technical data

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Company name_____

Address_____

City_____ State_____

...how the FLO•BALL® reduces your valve costs 3 ways!

1. Reduce initial costs . . . *by using fewer valves per system. FLO•BALL valves are used in place of gates, globes or plugs.*

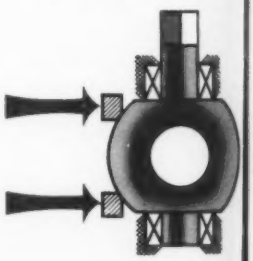
2. Reduce inventory costs . . . *by standardizing on one type valve for all applications requiring gates, globes or plugs.*

3. Reduce maintenance costs . . . *the FLO•BALL high reliability means less maintenance . . . no lubrication, no freezing, positive sealing. The top loading and replaceable seat reduces overhaul and start-up costs.*

Principles of Operation

In the bearing-fixed FLO•BALL valve all pressure forces exerted on the ball are transmitted to low-friction bearings. The pressure balanced seat results in a sealing force which is designed to insure positive sealing without seat distortion, and to minimize seat-resisting frictional forces. The combination of these low frictional forces accounts for the extremely low operating torque.

FLO•BALL VALVE
Fixes ball • Floats seat



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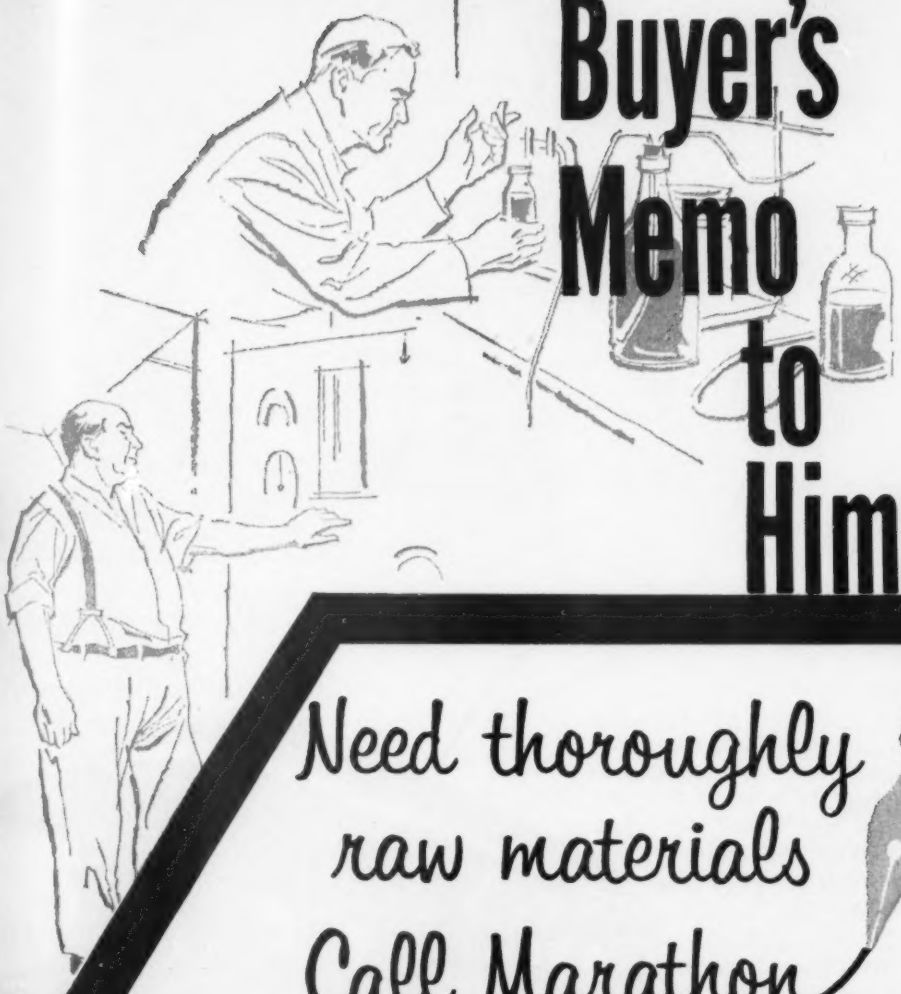

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and they run
and they run

1903—
Indianapolis.
a trolley car.
a rolling adventure surrounded by noise.
pennies, nickels, children . . .

and inside—
a Fairbanks Morse electric motor.
it drove the trolley over thousands of miles
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into glorious retirement.

pick a year—
from the turn of the century until now.
pick a month,
pick a day,
pick a city,
pick a town—
our motors are in its history . . .
pulsing, driving, working.
powering the things we need
and the things we want.
pushing our daily advances.
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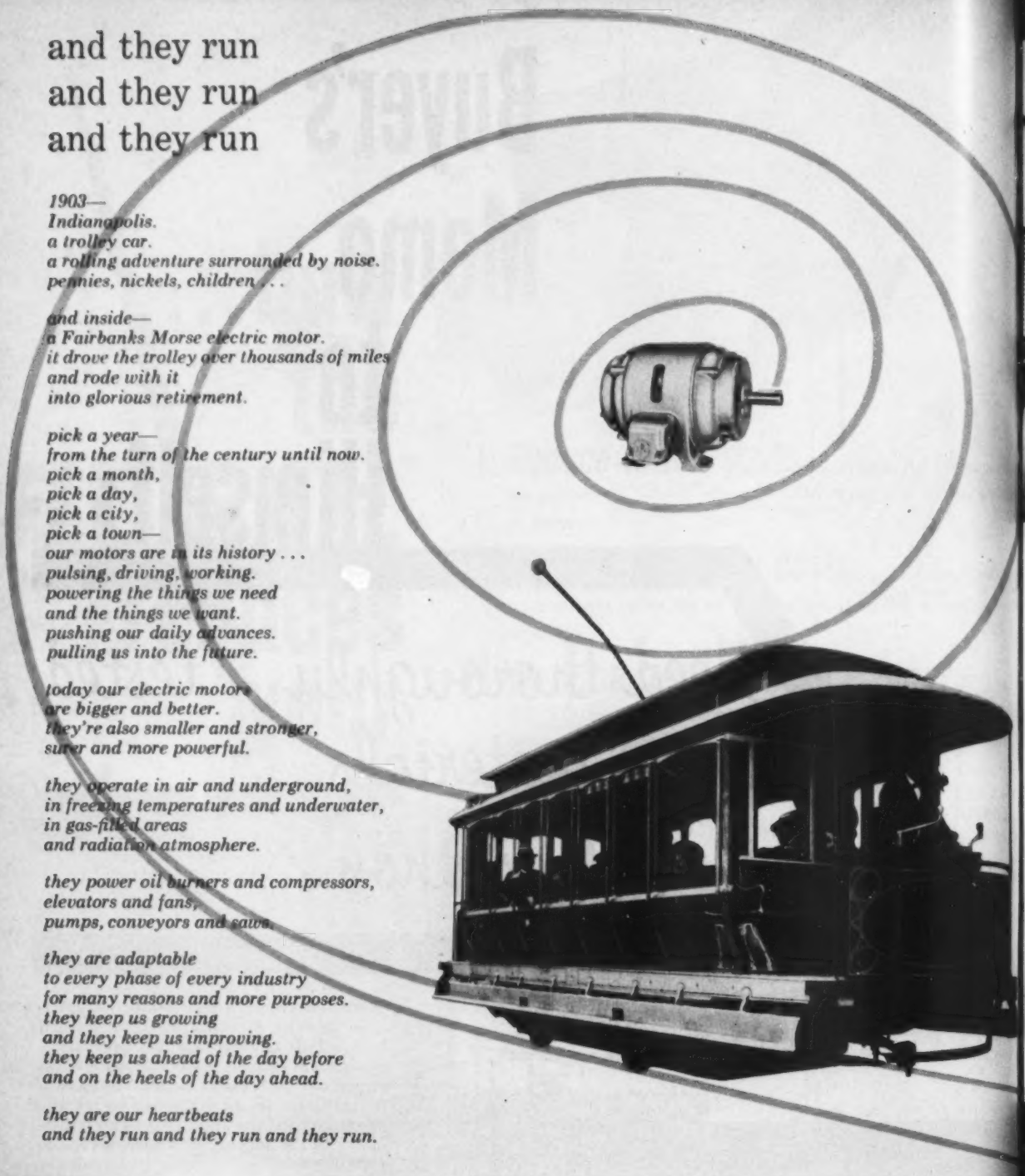
today our electric motors
are bigger and better.
they're also smaller and stronger,
surer and more powerful.

they operate in air and underground,
in freezing temperatures and underwater,
in gas-filled areas
and radiation atmosphere.

they power oil burners and compressors,
elevators and fans,
pumps, conveyors and saws.

they are adaptable
to every phase of every industry
for many reasons and more purposes.
they keep us growing
and they keep us improving.
they keep us ahead of the day before
and on the heels of the day ahead.

they are our heartbeats
and they run and they run and they run.



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If you are in a field where power for production must b efficient, effective and dependable—we suggest that you co sider our great variety of electric motors. For further inform tion please write to: Mr. George H. Herrick, Vice President a General Manager, Electrical Division, Fairbanks, Morse & C Freeport, Illinois.

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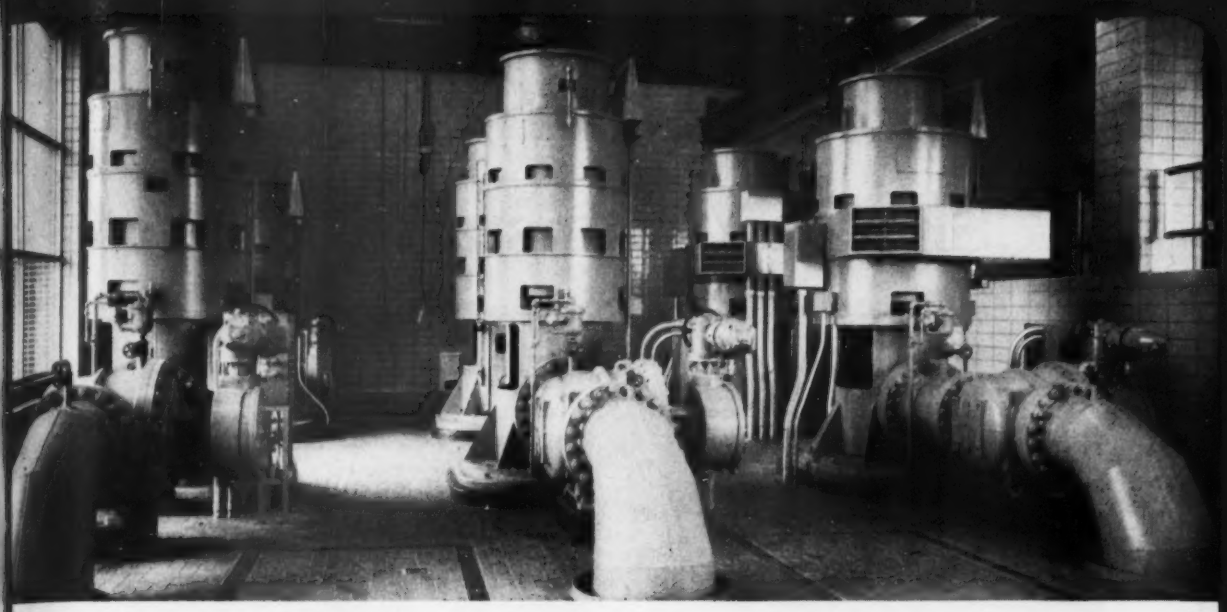

PLENTY OF WATER for Springfield-66 MILLION GPD Max.

Springfield, Ohio has a completely new, automatic water supply system by Layne. It guarantees 66 million gallons per day for their present and future needs—a job complete by Layne—and a completely satisfied customer. Field Tests exceeded the guaranteed pump efficiencies by 1% to 2% on all units. Consulting Engineers: Black and Veatch, Kansas City Missouri. Water Supply Contractors: The Layne Ohio Company, Columbus, Ohio. Do you need complete water service? Get it from Layne. Write for Bulletin 100.

Specifications

RAW WATER—10 Layne Gravel Wall Wells with Layne 18-8 Stainless Steel shutter screen and 10 Layne deep well pumps. 2800 GPM — 65 ft. TDH, 75 hp—440 Volts— 1750 RPM, located in two banks pumping to the filter beds. Pumps were installed 15 feet above ground level for flood protection.

FILTERED WATER—Six Layne high service pumps boosting filtered water into distribution system. Five are 12 MGD-285 ft. TDH, 700 hp—4160 volts—1185 RPM. Two are variable speed units. The sixth Layne Pump is a 6 MGD-285 ft. TDH, 400 hp—4160 volts —1185 RPM. All pumps operate through the central control panel.

City of Springfield, Ohio

LAYNE OFFERS COMPLETE WATER SERVICE: Initial Surveys • explorations • recommendations • site selection foundation and soil-sampling • well drilling • well casing and screen • pump design, manufacture and installation construction of water systems • maintenance and service • chemical treatment of water wells • water treatment—all backed by Layne Research. *Layne services do not replace, but coordinate with the services of consulting, plant and city engineers.*

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Which size BIRD CENTRISCREEN Should You Install To Effect Savings Like These?

The *Model 14* Centriscreen delivers up to 6000 gallons of clean, shive-free stock per minute.

The *Model 10* delivers up to 3000 gpm.

The *Model 6* is ideal for small machines and cylinder machines with one screen per vat. Capacity up to 1200 gpm.

Savings in Stock: Centriscreens are effecting substantial reductions in rejects as well as improving quality and formation. This applies to difficult as well as standard grades. Lumps and slime are no longer a problem.

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Savings in Screening Cost: Users are uniformly enthusiastic about the low cost of operating and maintaining their Centriscreens. These screens run and keep on running month in and month out without screen plate breakage or erosion.

Ask us to submit recommendations, layouts and estimates on the right size Centriscreen for your paper machine.

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CURRENT COMMENTS

Change to meet needs — Propose 20 per cent reduction in tariff rate

WARREN B. BULLOCK

Changing times are bringing about some radical shifts in the efforts of paper mill operators to gauge the kind and quantity of paper needed to meet the growing demand in the decade to come. On one hand, recent announcements tell of plans for multi-million-dollar expansion of existing companies. On the other hand, a million tons of capacity now idle will be converted by newsprint companies to the production of more profitable grades.

It is a unique situtation wherein a steadily increasing consumption of newsprint is still not enough to utilize the machinery now available for this grade. A recent world survey shows a material world surplus of newsprint capacity.

One bright spot for the Canadian companies in the newsprint field is the shift in the exchange value of the Canadian dollar, which has begun to turn toward par with the United States dollar after being at a 5 per cent premium. This is not exclusively a factor for Canadians as it has an impact on every United States investment in Canadian mills. In the case of International, with its great Canadian newsprint subsidiary, the annual loss at the old rate of exchange was $5,000,000 a year. When the Canadian dollar was at $1.05, every dollars worth of newsprint sold in the United States produced only $95 Canadian. When the Canadian dollar dropped to $1.02 the seller received $98.

The most important, recently announced, domestic expansions are those of International Paper Co. and Kimberly-Clark Corp. International has allocated $100,000,000 as its 1960 projected expansion, but Chairman of the Board John H. Hinman, in making this announcement, did not indicate the nature of the planned enlargements. W. R. Kellett, president of Kimberly-Clark, while not announcing the dollar measurement of its planned improvements, said that the company would enlarge its coated paper capacity by 18 per cent including the installation of a new machine and complementary equipment at its mill at Niagara, Wis.

The announcement of projected conversion of a million tons a year of newsprint capacity was made by the Newsprint Information Committee, presumably to include both Canadian and United States mills. It is well known that some idle Canadian machines are comparatively antiquated in comparison with the modern, high-speed machines, but could be profitably employed for the production of other grades without too expensive renovation.

According to this report, a Texas mill is converting one machine from newsprint to kraft and will be able to sell the output at materially above the newsprint price. The change-over will be accomplished by an expenditure of something over a million dollars. A western mill is changing from newsprint to telephone directory paper at a cost of $650,000.

Tariff rate reduction

A new round of tariff rate reductions is on its way. As of July 11, Government agencies began taking testimony from industry as to the proposals to cut existing duty rates by 20 per cent over a four-year period. Later in the year, the United States representatives will begin reciprocal trade agreement negotiations with other nations participating in these exchanges. A large number of paper grades are on the tentative list for tariff rate cuts.

Government guarantees

The Export-Import Bank has announced that United States exporters can obtain Government guarantees to cover political risks involved in short term transactions abroad. The risks involved include foreign currency restrictions, laws which prevent the delivery of goods ordered, cancellation of import licenses, war hostilities, rebellion and civil commotion and expropriation of exported items by foreign authorities.

International encourages reading

"Men who read more, achieve more". This is the thought behind a new national advertising campaign in which International Paper Co. will, for the first time address a national audience. The campaign's target is to encourage more reading among more people. The advertising says that business men who earn $15,000 a year read twice as many magazines and books as those who make under $7,500—a statement which brought this comment from one writer: "If you're going to get eye strain, you might as well be paid for it".

Net Incomes

Celotex Corp.—Net profits for six months ended April 30 fell to $306,198 from the $1,629,020 recorded a year ago, the drop being charged to a falling off in housing starts this year.

Champion Paper & Fibre Co.—Net income for year ended March 31, $9,700,605; a year ago, $7,677,587.

International Paper Co.—Net income for first quarter, $18,275,822; a year ago, $18,016,406. Sales were up 7 per cent.

P. H. Glatfelter Co.—Net income for first quarter, $810,755; a year ago, $514,352.

Puget Sound Pulp & Timber Co.—Net income for March quarter, $1,224,000; a year ago, $957,000.

Riegel Paper Corp.—Net income for thirteen weeks ended April 3, $725,468;

a year ago, $552,446—despite a two-week strike at the company's New Jersey mills.

Sealright-Oswego Falls Corp.—Net income for March quarter, $385,170; a year ago, $529,827.

West Virginia Pulp & Paper Co.—Net income for six months ended April 20, $6,011,000; a year ago, $5,475,000.

Corporation changes

The multi-million-dollar battle for control of the **United States Envelope Co.** was ended June 17 when **West Virginia Pulp & Paper Co.** interests took over control with eight of the eleven directorates, and the naming of Wiley L. Jennings, sales vice president of West Virginia, as the new president. Alfred F. Duval, president of the world's largest envelope company, together with Eldon V. Johnson, chairman of the board, who had been the prime movers in a futile effort to merge with **Hammermill Paper Co.**, resigned. The United States Envelope Co. has had close connection with Hammermill for many years, being the chief converter into envelopes of Hammermill's paper. A few weeks ago, however, when directors of Hammermill and the envelope company voted to merge the two corporations, David L. Luke Jr., president of West Virginia, published an offer to buy 250,000 shares of envelope common stock at $38, for a total of about $7,000,000. With early purchases costing some $6,000,000, the success of this offer gave West Virginia voting control, sufficient to overturn the proposed merger and oust the pro-Hammermill officers and directors. United States Envelope common stock was traded over the counter Friday, June 17, at 23½ bid and 26¾ asked.

• • •

The Waterbury Felt Co. of Skaneatteles Falls, N.Y., has been acquired by **Porritts & Spencer (Canada) Ltd.**, of Hamilton, Ontario. Waterbury will become a part of the international Porritts & Spencer organization, with head office in Bury, Lancashire, England, whose first mill was established 152 years ago. The Waterbury mill will be the company's first in the United States.

• • •

The New Jersey Supreme Court has blocked a proposed merger of **Interstate Container Corp.** of Glendale, N. Y., and **United Board & Carton Co.** of Jersey City. The action followed a complaint by minority stockholders that the proposed merger would give Saul L. Epstein, sole owner of Interstate a profit of $4,000,000, through his receipt of 160,000 shares of United. This would give him control of United and he would become its president. The court ruling provides for a reappraisal of the value of United stock.

• • •

David B. Smith, president of Wausau Paper Mills Co. of Brokaw, Wis., has issued the following statement: "Contrary to any rumors circulating in the paper trade, **Wausau Paper Mills Co.** is not being purchased by the **Standard Packaging Corp.** nor are there any negotiations in process to purchase the company by the Standard Packaging Corp. or by any other company".

• • •

Weyerhaeuser Co. has acquired the **Roddis Plywood Corp.** of Marshfield, Wis., in a $17 million stock exchange transaction. Roddis will be operated as a division of Weyerhaeuser.

• • •

Flintkote Co. has announced the acquisition of all the outstanding stock of the **Sealzit Co.** of Riverside, Calif., for more than $1 million in a cash transaction. Sealzit is a manufacturer of Sealzit Guns and accessory equipment widely used in the application of resins, binders and plastics to make such products as boats, trailers and furniture.

• • •

Hammermill Paper Co. of Erie, Pa., has announced the purchase of the controlling interest in **Old Colony Paper Co.** of Westfield, Mass., from the Strathmore Paper Co. of West Springfield, Mass.

• • •

Puget Sound Pulp & Timber Co. of Bellingham, Wash., held a meeting to vote on the merger with **Hopper Paper Co.** of Taylorville, Ill. If the merger is approved, Hopper will become a division of Puget. Puget produces bleached sulfite pulp, toilet and facial tissues and paper towels. Hopper manufacturers fine writing papers.

• • •

American Can Co. has added to its timberland holdings through the acquisition of the **Allison Lumber Co. Inc.** of Bellamy, Ala. The property includes about 125,000 acres which is recognized in the industry as one of the finest timberland stands in the south. The property is adjacent to the new, large pulp and paper mill of the Marathon Division of American Can Co. in Naheola, Ala. Purchase price of the acquisition was not disclosed.

Consolidated Changes Name

The Consolidated Paper & Box Mfg. Co. Inc. recently shortened its name to Consolidated Paper Box Co.

The firm specializes in making setup paper boxes. In recent months, the company sold its wholesale coarse paper business to Southern Paper & Supply Co., and its folding box business to the Randolph Paper Box Division of Albemarle Paper Mfg. Co.

Financial report

As Wall street securities rose in early June toward the higher prices of early in the year, paper industry issues followed the trend, with paperboard issues somewhat behind the paper company stocks.

Stock and Bond Quotations

New York Stock Exchange — Stocks

Closing Prices	June 10 1960	May 31, 1960
American Can	38	37⅞
Same Pref.	37¼	37½
Celotex	25¾	30⅛
Same Pref.	* 18⅛-18½	* 18⅝-18⅞
Certain-Teed	12	12⅛
Champion P & F Co.	33¼	31⅛
Same Pref.	* 85⅞-92¾	91¾
Chesapeake of Va.	34¾	36¼
Container	25	24¼
Same Pref.	* 88-89	* 86-87½
Continental Can	41	42¾
Same Pref.	80	* 81-81¼
Crown Zellerbach	46¼	45⅛
Same Pref.	* 91-92	* 89½-91
Diamond National	34	31⅛
Same Pref.	29½	30
Federal Paperboard	36½	37½
Same Pref.	* 19¾-20	* 20¼-20¾
Fibre Paper Board	38	37¾
Great Northern	46	42⅛
Hammermill	28	29¼
International	106½	100
Same Pref.	* 91½-93	* 89½-92¼
Kimberly-Clark	78¾	72⅞
KVP Sutherland	30¼	28
McAndrews & Forbes	* 28-28½	* 26½-27
Masonite	32½	32½
Mead Corp.	36¼	37⅜
Same Pref.	* 86½-89	* 86⅜-88
Minn. & Ont.	37¼	28¾
Nat. Vulc. Fib.	29	—
Oxford Paper	29½	29
Same Pref.	* 90-90⅝	* 87½-89
Rayonier	20⅛	18⅛
Riegel Paper	33¼	31
St. Regis	42½	38⅛
Same Pref.	* 91-93	* 91-93
Scott	90⅜	83⅛
Same $4 Pref.	* 87-88⅛	* 89-90⅛
Same $3.40 Pref.	* 73½-75	* 74-75½
Sealright	34¾	34
Standard Packaging	30½	24
Same $1.60 Pref.	* 85-96	* 75-80
Same $1.20 Pref.	35¼	* 28⅛-29¼
Same 6% Pref.	35	28¾
Union Bag-Camp	36½	33
United Bd & Cart	* 23⅞-24¾	* 26-26¼
U.S. Gypsum	113½	103
Same Pref.	154	* 152-153
S. D. Warren	35¾	* 31¼-31½
West Va. P & P	44	41¾
Same Pref.	* 95-96	93

New York Stock Exchange — Bonds

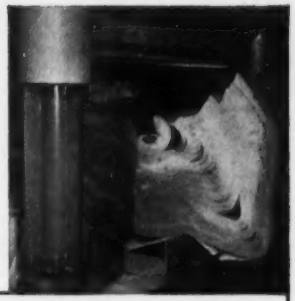
Champion P & F Co. 4½%	107	107
Champion P & F Co. 3¾%	—	—
Kimberly-Clark 3%	—	88⅛
Oxford 4¾%	105	104½
Scott 3%	115	108¼

American Stock Exchange — Stocks

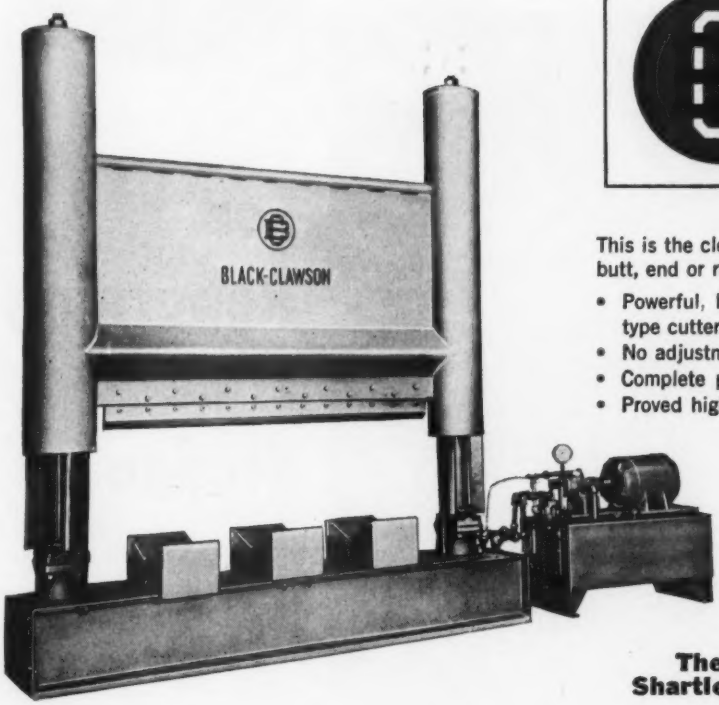
Allied Paper	14⅜	13⅝
American Writing	29⅛	31
Brown Co.	15	14⅜
Puget Sound P & T	24¾	23⅛

*Closing Bid and Asked Prices

How to Split Rolls with Ease and Speed



HYDRAULIC ROLL SPLITTER

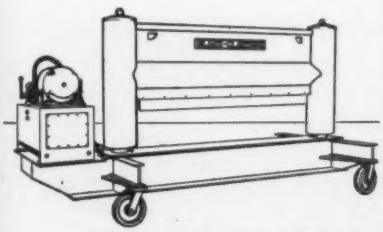


This is the clean, efficient, modern way to split pulp rolls, butt, end or reject rolls for fast, economical repulping.

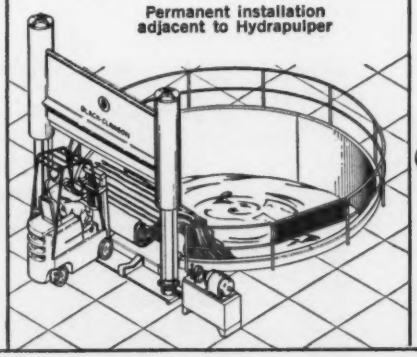
- Powerful, heavy duty hydraulically actuated guillotine type cutter
- No adjustments for variations in roll diameters
- Complete package with power unit, base and controls
- Proved highly successful in many mill installations
- Safe... easy to load
- Easy to operate... a one-man job
- No noise, dust or frustration

Write or phone the Shartle Division for complete details.

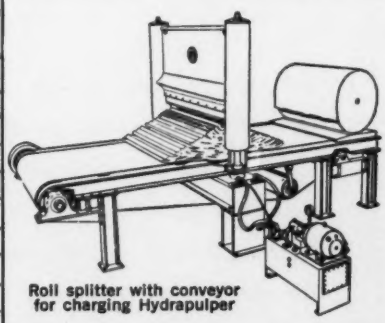
The Black-Clawson Company
Shartle Division, Middletown, Ohio



Portable roll splitter for use in several locations



Permanent installation adjacent to Hydrapulper



Roll splitter with conveyor for charging Hydrapulper

Single Source for Stock Preparation Machines & Systems

For more data circle 119 on Post Card

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Rotary Kilns

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We are specialists in the design and manufacture of rotary kilns, coolers and auxiliary equipment for burning lime, lime sludge and for many other purposes.

Over 1,250 Smidth rotary kilns have been furnished all over the world.

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The Beloit Album

SOUTHERN LAND TIMBER AND PULP Corporation's exec. vice president, Edward L. Cowan *(second left)*, at a recent Beloit conference, discusses design details with Beloit's C. E. Macklem, E. H. Neese, Jr., E. D. Beachler, and D. R. Schamp.

(Left) **INTERNATIONAL PAPER COMPANY'S** Mobile Mill assistant UME, T. S. Bartley *(l)* is seen on the erecting floor with Beloit designer D. E. Leavitt. They are discussing a roll wrapper.

(Above) **DUNN PAPER COMPANY'S** president, G. C. Dunn *(r, c)* and mill manager, W. E. Woods *(l, c)*, look over their new Fourdrinier with Beloit's sales manager, F. G. Ramsden *(r)*, and staff engineer M. M. Cobb.

(Right) **CONTINENTAL CAN COMPANY'S** C. S. Huestis *(l)* and Beloit division sales manager, C. H. Swartz, get a close-up view of a vat inlet on the main erecting floor.

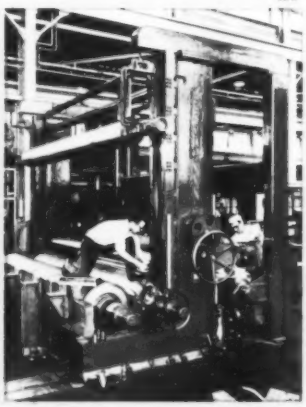
Progress report from the Beloit Group

. . . expanding to serve you better

BELOIT EASTERN CORPORATION, Downingtown, Pennsylvania, reveals some dramatic changes since its recent expansion program. Total plant area is now 300,000 sq ft. Building pictured above, at left, houses the expanded foundry and core room. This addition also houses a completely new and modern welding department. Beloit Eastern's foundry now has sufficient productive capacity to meet the needs of its own shops, as well as the casting requirements of E. D. Jones Corporation. Expanded sales and engineering activity further increase Beloit Eastern's effectiveness in the field of finished product processing equipment. Views at Beloit Eastern are seen below. (a) Main erecting area bustles with activity as finished product processing equipment nears completion. Shipping area in foreground will move into new building later this year. (b) Model M Winder nears completion on the main erecting floor. Winder is equipped with Beloit's new improved slitting arrangement. (c) Engineering department where designs for finished product processing equipment begin. Engineering and sales departments share these spacious quarters.

a.

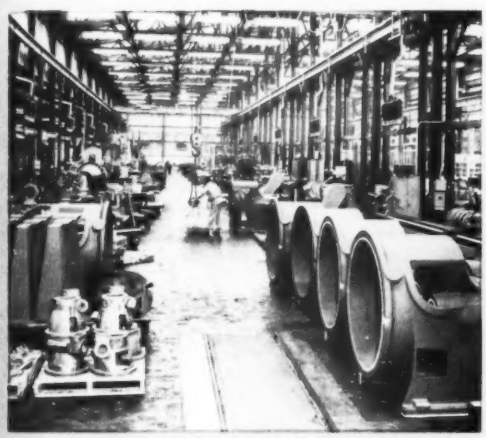
b.



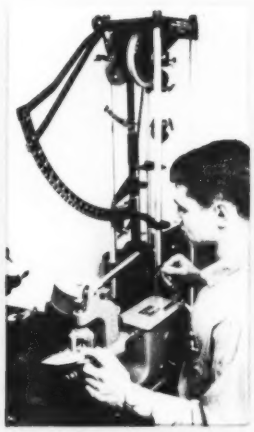
c.

(Below) **BELOIT IRON WORKS, WELDING DIVISION,** is located three miles south of main plant, near Rockton, Illinois. New facilities, embracing the welding and fabricating division in an area of 75,000 sq ft, enable Beloit to offer a new and comprehensive range of fabricating services. This site is ideally located, with direct rail siding, a mile's drive from the Northwest Tollway. View below, with pipe storage in foreground, shows plant shortly after completion. Beloit's expansion plans also include a new 45,000 sq ft Research and Development Center.

E. D. JONES CORPORATION, Pittsfield, Massachusetts, occupies this modern plant, built for utmost efficiency in the design and manufacture of precision pulp and stock preparation equipment. Aluminized steel is the basic building material. The plant covers an area of 200,000 square feet and can be expanded easily to 640,000 square feet. It is functionally modern in every respect, both office and production areas featuring the latest in facilities. The production area is lighted by high output fluorescent lamps and is heated by radiant gas unit heaters, each with integral thermostat. Air conditioned, well-lighted offices are designed to give complete working comfort and efficiency. Plant has complete rail and truck shipping-receiving facilities. Switch tracks lead to main line of New York Central.



ACTIVITY AT JONES is evident in this long-range view of one of the seven manufacturing bays, each 50 wide by 300 feet long. Extensive line of pulp and stock preparation equipment is produced.



PAPER TESTING is part of the job in the new Jones Research and Development Laboratory.

ENGINEERING AREA, spacious, well lighted, where newest pulp and stock preparation equipment starts on drafting boards.

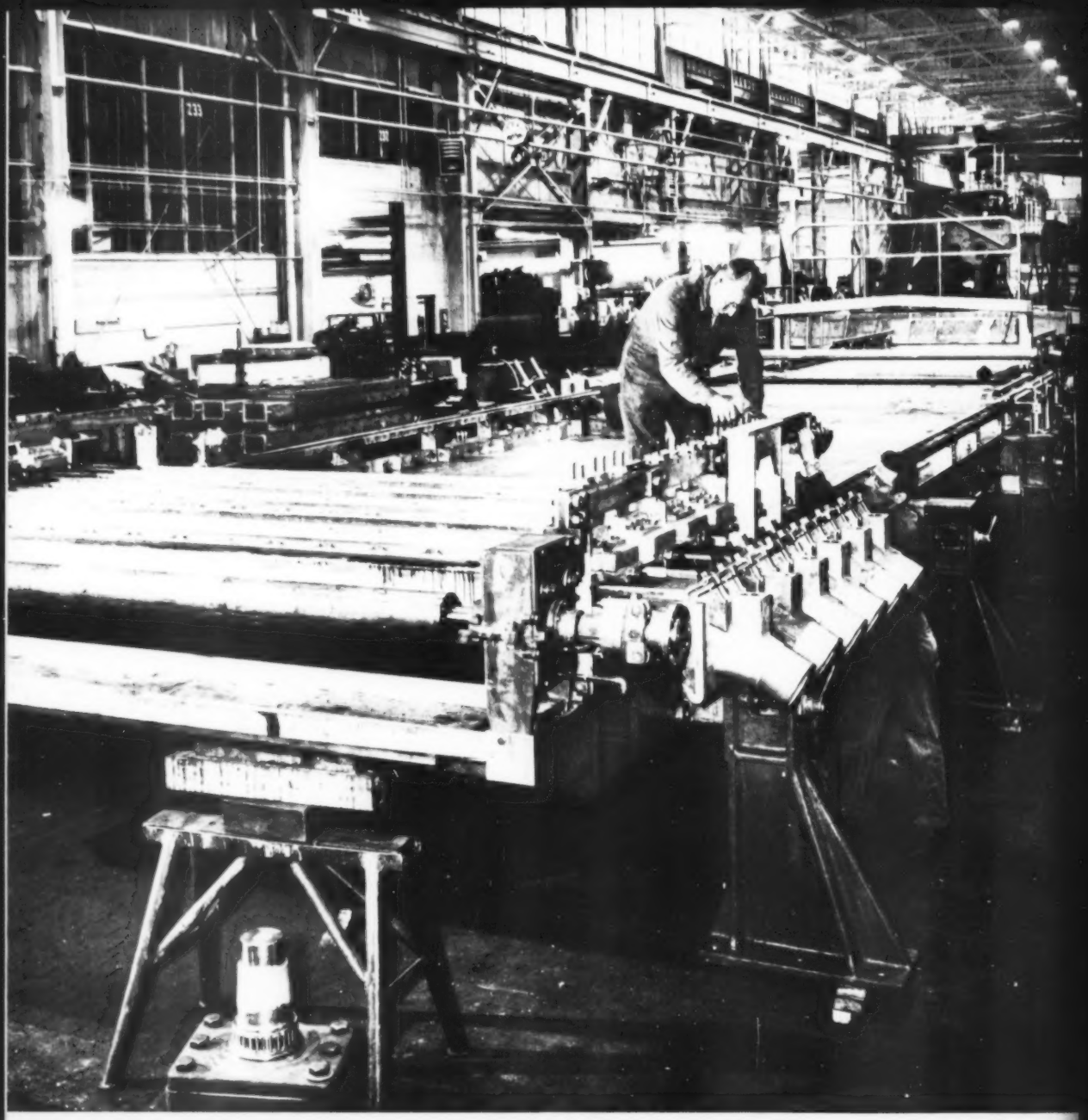
ASSEMBLING BARS on Jones Adapta-Plug, with Fulbar Shell Fillings in background, familiar to all papermakers.

your partner in papermaking

BELOIT

PAPER MACHINERY

BELOIT IRON WORKS · PAPER MACHINERY · BELOIT, WIS., U.S.A.



S. R. CHRISTENSEN

FOURDRINIER FOR DUNN PAPER COMPANY as it appeared on main erecting floor at Beloit, Wisconsin. This 132" Fourdrinier was part of a major machine rebuild at the Port Huron, Michigan, mill. The machine is now in full production, producing the famous Dunn specialty papers. Rugged dependability best describes a Beloit-built Fourdrinier—designed to promote natural drainage, permit higher speeds, improve general sheet characteristics, and help reduce machine downtime. Beloit builds Fourdriniers of every type—stationary, cantilever, pit stringing removable, and aisle stringing removable. Whether you need a completely new Fourdrinier or a rebuild—call on Beloit.

your partner in papermaking

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NEWS of the INDUSTRY

Forest Products Laboratory Celebrates Golden Anniversary

Many of the nation's foremost figures in the world of wood gathered on June 2 to join with the staff of the U. S. Forest Products Laboratory in Madison, Wis., in observance of its Golden Anniversary.

The federal institution, a unit of the Forest Service, U. S. Department of Agriculture, was founded on June 4, 1910, in cooperation with the University of Wisconsin. Then a research organization unique in the world, it has since been copied widely by other nations. It is the federal government's only scientific laboratory with national responsibility for research in its field.

A three-day program of observance stressed the theme, "Forest Products Research—the Next Fifty Years". Four top industry executives examined the significance of research to the lumber, plywood, pulp and paper and the chemical industries in one of the highlight events on the program.

At the Friday morning session in the University of Wisconsin's Memorial Union theater, Dr. C. A. Elvehjem, University president, delivered a major address, "Research in Today's World".

He was followed on the rostrum by the four industry leaders, each of whom described how research has been applied to his field. F. K. Weyerhaeuser, board chairman of the Weyerhaeuser Co., will represent the lumber industry; H. E. Whitaker, board chairman of Mead Corp. and president of the American Paper and Pulp Association, spoke for the paper industry. The plywood industry was represented by W. E. Difford, managing director of the Douglas Fir Plywood Association; and the chemical industry by Samuel W. Lenher, vice president and adviser for research of E. I. duPont de Nemours & Co. Richard E. McArdle, Washington, D.C., Chief of the Forest Service, spoke on the role of research in forest management.

W. E. Difford

S. W. Mead

F. K. Weyerhaeuser

H. E. Whitaker

Friday afternoon's program consisted of laboratory tours for guests and special dedication ceremonies highlighting various research achievements that have gained industrial prominence.

Honors received by the Laboratory included the Department of Agriculture's highest award—its distinguished service award. A large plaque from the American Paper and Pulp Association was presented. The plaque was inscribed: "For distinguished achievements in the pulp and paper research, notably Semichemical and Cold Soda processes that greatly enhanced the utility of hardwoods, this plaque is presented the Forest Products Laboratory on its golden anniversary, June 2-4, 1960. American Paper and Pulp Association".

Other plaques and scrolls were presented by the National Lumber Manufacturers Association, the Insulation

The highest honor of the U.S. Department of Agriculture, its distinguished service award, was presented to the Forest Products Laboratory at its Fiftieth birthday party. E. C. Betts Jr., department personnel director, is pictured handing the award to Edward G. Locke, laboratory director.

Plaque presented to the Laboratory by the APPA. Shown left to right are: Gardner H. Chidester, chief of the Laboratory's division of pulp and paper; Director Edward G. Locke; Howard E. Whitaker, president of APPA and board chairman of Mead Corp.; and Joseph A. Staidl, retired research engineer of the Laboratory.

Board Institute, the American Institute of Timber Construction, the Douglas Fir Plywood Association, the Home Manufacturers Association and the American Wood-Preservers Association.

Plaques, citations and messages of congratulations came also from such nations as Finland, Germany, Australia, New Zealand, Canada and the Philippines.

Bolton Award Essay Winners

During the 41st Annual Convention of the PIMA, the following winners were announced for this year's 13th Bolton Award Essay Contest.

First prize was won by Robert A. Bagg, mill visit host for Strathmore Paper Co. of West Springfield, Mass. Second prize was won by James C. Lannen, personnel supervisor for Fraser Companies Ltd. of Atholville, N. B. The third prize was won by Clifton Joseph Walker, map draftsman for E. B. Eddy Co. of Hull, Quebec.

The seven remaining winners were: Robert E. Lee Jr., quality Control Supervisor for Rochester Paper Co. in Michigan; C. H. Rausch, vice president-manufacturing for Hennepin Paper Co. in Little Falls, Minn.; Donald E. Reed, supervisor of stores for Continental Co. in Elkhart, Ind.; M. S. Dimitri, research engineer for West Virginia Pulp & Paper Co.; Mrs. Joann Grahm, secretary for Packaging Corp. of America's Central Fibre Division in Hutchinson, Kansas; Mrs. Helen Kalivoda, secretary, management personnel for Huss Ontonagon Pulp & Paper Co. in Ontonagon, Mich.; and Robert L. Witham, plant guard for Grand Northern Paper Co. in East Millinocket, Me.

Copies of the 13th Bolton Award book will be ready for distribution in the fall. Persons interested in receiving a copy are asked to write to John W. Bolton & Sons Inc., Dept. S, Lawrence, Mass.

Computer Used By Mead for Research Work

Complex research problems, previously considered too lengthy to consider, are now being solved by Mead Corp. through the use of a general purpose computer.

The unit is used at the company's Central Research Laboratories in Chillicothe, Ohio. Approximately 45 per cent of the work done by the computer consists of one- or two-shot research and design problems, such as part of a paper machine or mass and flow balances. Statistical programs are one of the most valuable types run on the computer.

Due to the variability of paper products and paper itself, hundreds of pieces of data must be analyzed at once. Now parts of a paper machine can be designed, where previously the hosts of variables and relationships were too formidable to tackle.

Use of the computer, a G-15 made by the Computer Division of Bendix Corp., has raised the technical level of the work that can be done. Twenty per cent of the computer's work is directly concerned with production, such as quality tests of paper. Thirty per cent is statistical and five per cent is data reduction.

Imagineering Contest Ends This Month

The Imagineering Contest which is being sponsored by the National Paper Trade Association Inc. will close at midnight July 31.

Since there is no limit to the number of ideas you submit, you may obtain additional official entry blanks by writing to N.P.T.A. headquarters in New York.

The headquarters is currently receiving unusual, unique and obscure printed specimens in duplicate as well as entries which are ideas now, but might be utilized by printers and publishers in the future.

50-Millionth Tree Farm Acre Dedicated

The nation's 50-millionth Tree Farm acre was dedicated near Atmore, Ala., on May 18.

Tree farmer Kimbrell E. Cunningham was honored as the owner of the milestone acre by Alabama's Lt. Gov. Albert Boutwell at a ceremony held at Little River State Forest, where more than 850 persons attended.

J. E. McCaffrey, vice president of the Southern Woodlands of International Paper Co. and chairman of the American Forest Products Industries' national technical forestry committee, spoke at the ceremony saying: "I think it is particularly appropriate that the Nation's 50 millionth Tree Farm acre should be located in Alabama and especially in Escambia County. Only 20 miles from here, there is a 40-acre tract in Dixonville, owned by the heirs of the late E. N. McCall. That tract became the number one certified unit in the American Tree Farm System on April 4, 1942."

Alabama launched the first organized Tree Farm program in 1942 and became the first state to adopt a movement that now embraces 47 states. The American Tree Farm System today has more than 17,000 member. Alabama has taken the national lead in the Tree Farm acreage with more than 5,255,000 acres, passing Florida, the national leader for years.

Wood Products Lab Dedicated at North Carolina State College

The new $250,000 Brandon P. Hodges Wood Products Laboratory was formally dedicated at North Carolina State College.

The laboratory was named after the late Brandon P. Hodges, a key figure in the development of several college facilities and programs, particularly in the fields of forestry, wood products and pulp and paper technology.

The laboratory is the only research facility of its kind in the Southeast. It is equipped with scientific and analytical equipment necessary for research in wood and wood products.

Three objectives are outlined for the new laboratory. They are: (1) A quest for knowledge about the properties and uses of wood; (2) to anticipate future needs of the wood-using industry and to conduct research designed to provide information required to meet industrial needs; and (3) to develop the processes and techniques required to develop new uses for wood, improve upon old uses and to develop new uses for wood, improve upon old uses and to develop techniques for converting wood into other useful products.

NASMI Announces Insurance Program

A new life insurance and major medical plan has been announced by M. J. Mighdoll, executive vice president of the National Association of Secondary Material Industries.

Any member of NASMI requiring information concerning this program may write to: NASMI Insurance Fund, 222 West Ninth St., Wilmington 99, Delaware. The program will go into effect on June 15.

Career Guidance Committee to Review Industry-Wide Education Status

The Paper Industry Career Guidance Committee has mailed over 1,000 questionnaires to pulp, paper and paperboard manufacturers and converters in the United States in an effort to make an industry-wide education status review.

The purpose of the review is to accurately determine the number of college graduates now employed in the

(Continued on page 285)

*Idea submitted by Clarence Wentz, Crossett Company, Crossett, Ark.

Photo by: Rhodes Studio, Crossett, Ark.

HAM FELTZ says:

"Reminds me of HAMILTON Felts... they 'stand up' too!"

"The Virgin Pine Forest
in southeast Arkansas,
preserved by the Crossett Company,
reminds me how Hamilton Felts
benefit papermakers,"
writes Clarence Wentz, pictured here.
"Like a giant in a forest,
Hamilton Felts defy time and hazards."

Woven on super looms,
joined by skilled fingers,
and inspected with patient care,
Hamilton Felts give
consistent high quality performance.
The long, useful life you get
from Hamilton Felts means
operational savings — bigger profits!

Why not write us to have one of our
Hamilton Felts Service Salesmen
stop in to visit with you?
If one of our 300 proven styles
won't solve *your* specific problem,
we will be glad to design
a Hamilton Felt that will.
Write us today!

YOU CAN'T BEAT
Hamilton
FELTS

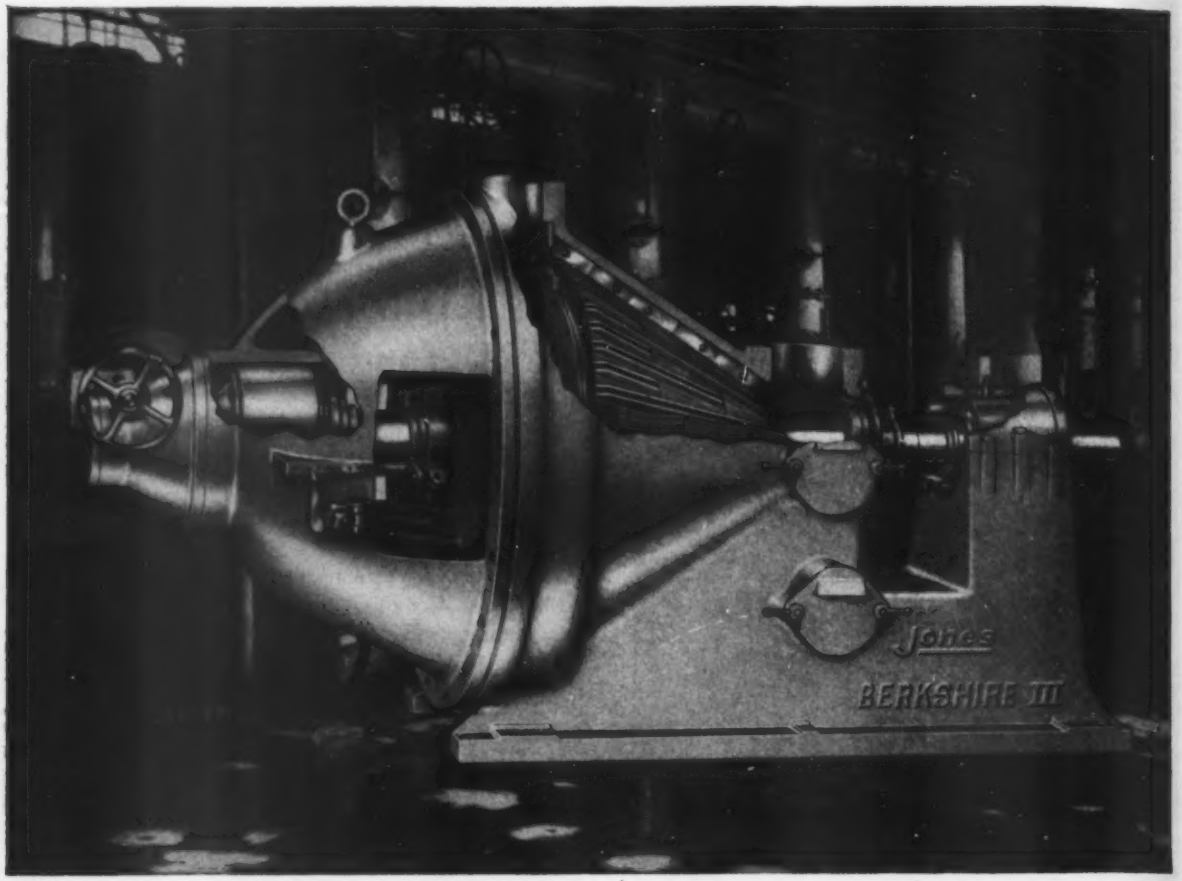
*WIN... *A NEW Shakespeare Spincast Fishing Outfit!*

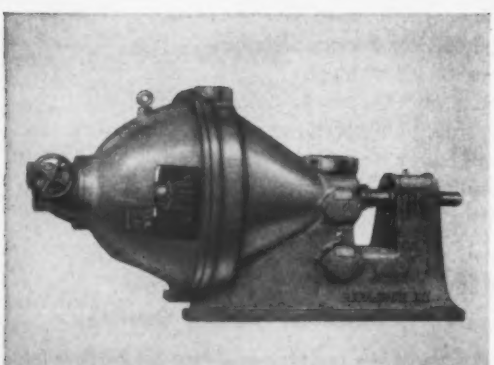
"What famous place reminds you of Hamilton Felts? Tell us why in a few words; sign your name and address and name of company. Each month, the idea from a papermaker that we use wins a new 1960 model Shakespeare Spincast Rod and Reel—FREE! When identical winning ideas are submitted by 2 or more papermakers, the one with the earliest postmark will be considered the winner. *Every U.S. papermaker entrant* receives a famous Rex Spoon fishing lure—FREE. Send me your suggestion—today. Ham Feltz, 612 First National Bank Bldg., Cincinnati 2, Ohio."

SHULER & BENNINGHOFEN, HAMILTON, OHIO

For more data circle 122 on Post Card

Superior design for superior performance . . .
NEW JONES BERKSHIRE REFINERS





JONES Berkshires are available with your choice of fillings for a wide variety of operation on all types of stock.

Precision built in the Jones tradition, new Berkshire wide angle Refiners develop maximum fibre strength with minimum fines formation. The economical Berkshire, with proper tackle, is highly successful not only in hot stock refining but also in the development of both soft and hard wood pulps. In addition, Jones Berkshires offer several important operating advantages. With only three major components—shell, plug and head—compared to seven in most competitive machines, better alignment, longer wear and more uniform refining are assured.

Maintenance is much easier, too. The adjustment mechanism, spherical roller bearings, and packing glands form an integral assembly with the plug. This can be removed as a unit for chipping or refilling without disconnecting the stock piping. Certain major components are also interchangeable with other Jones Jordans — resulting in savings from lower spare part inventories. For full details, write to E. D. Jones Corporation, Pittsfield, Massachusetts.

E. D. JONES CORP. member BELOIT group PITTSFIELD, MASS.

Jones

PULP MILL EQUIPMENT AND STOCK PREPARATION MACHINERY

Canadian Associates:
The Alexander Fleck Ltd.
75 Spencer Street, Ottawa

For more data circle 123 on Post Card

industry and the number needed in the next five-year period—according to the special skills in which they were trained.

Walter B. Morehouse, committee chairman, stated that the tabulated results of the survey will indicate clearly, the areas of industry need for specially trained people. This information will help the committee plan a specific program designed to lead young people toward career training which will equip them for employment in the paper and allied industry.

University of Maine Receives $15,000

A gift of $15,000 from the D.S. and R.H. Gottesman Foundation of New York City, has been given to the University of Maine. The gift will be used to establish a computation and problem analysis laboratory named in honor of the late D. Samuel Gottesman, a pioneer in the pulp and paper industry.

The laboratory will be used for the teaching of problem solving and process control on both the undergraduate and graduate levels. Among the many research uses cited were the solving of problems in fields of pulp stock flow, drying of paper and the drainage characteristics of pulp.

The laboratory and its equipment will also be used by the university's Department of Industrial Cooperation in its program of assistance to the pulp and paper and other industries.

Forestry Notes

Three top administrators from the State University College of Forestry at Syracuse University were invited to attend and participate in an international symposium on macromolecular chemistry that was held in the Union of Soviet Socialist Republics. The four-day professional parley, sponsored by the International Union of Pure and Applied Chemistry, was scheduled for June 14 through 18 in Moscow, Russia. Attending the worldwide conference were leading chemists from within and without the Iron Curtain.

An information bulletin has recently been issued on the Fifth World Forestry Congress to be held from August 29 through September 10, 1960 on the campus of the University of Washington, Seattle, Wash. The booklet provides detailed information on background, participation, purpose and entire program of the Congress. Inquiries concerning the Congress should be addressed to I. T. Haig, Executive Secretary, Fifth World Forestry Congress, c/o Office of International Conferences, Department of State, Washington 25, D.C.

The University of Florida School of Forestry recently celebrated its 25th birthday. Harold S. Newins, director emeritus who established the forestry department in 1935, was feted at the event. The department became a school in 1937 and graduated its first class in 1938. Since then the school has conferred 439 bachelor degrees and 38 masters degrees.

A. L. Wenrich, district manager for Continental Woodlands, Hopewell, Va., recently announced the award of the 1960 Continental Can Co. Forestry Scholarships to James L. Hamrick, III of Richmond, Va., and Donald B. Zobel of Apex, N.C. The scholarships are awarded for $1,000 per year for four years of study in the field of forestry.

Unloading Wood Chips

Kewanee

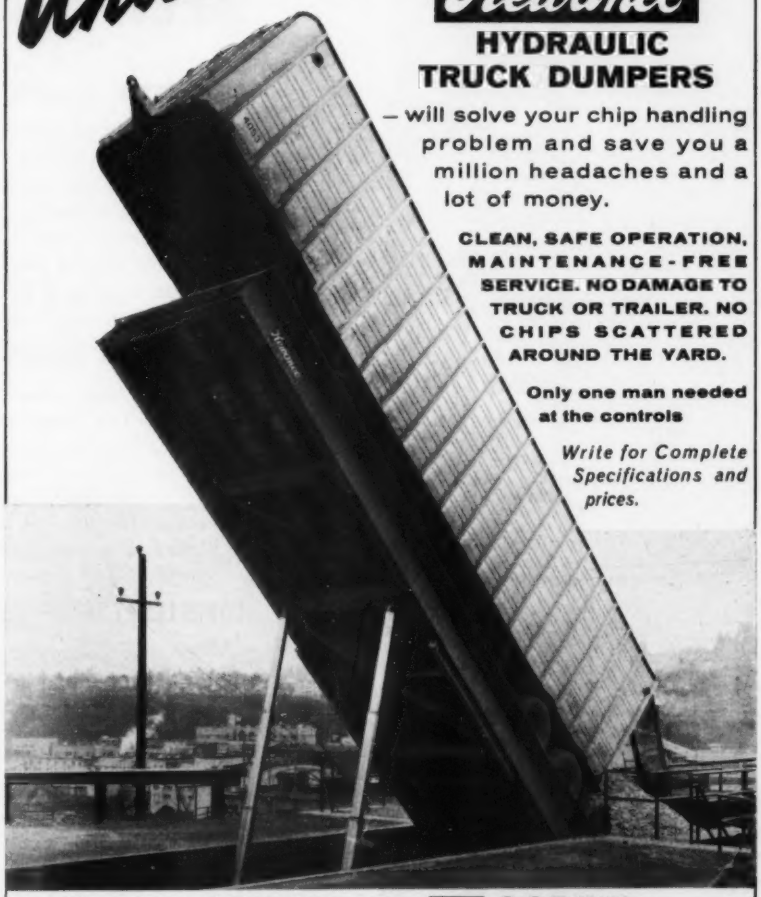
HYDRAULIC TRUCK DUMPERS

— will solve your chip handling problem and save you a million headaches and a lot of money.

CLEAN, SAFE OPERATION, MAINTENANCE-FREE SERVICE. NO DAMAGE TO TRUCK OR TRAILER. NO CHIPS SCATTERED AROUND THE YARD.

Only one man needed at the controls

Write for Complete Specifications and prices.



Installation above is in Pacific Northwest area. Dumper has a 34-ft. platform. Kewanees are available in platform sizes up to 70 ft., with a 50° angle of tilt. Larger platforms obviate the necessity of unhitching tractor from trailer. Kewanee quality is based on 40 years of pioneering and development and you have available our "Protective Maintenance Inspection Service." Your dumper never becomes an orphan after you buy it!

SCREW CONVEYOR CORPORATION

709 Hoffman Street, Hammond, Ind.

Southern Plant Winona, Mississippi | West Coast Plant Santa Clara, Calif.

Branch Offices

Dallas, Texas Hackensack, N. J. | Memphis, Tenn. Tampa, Florida

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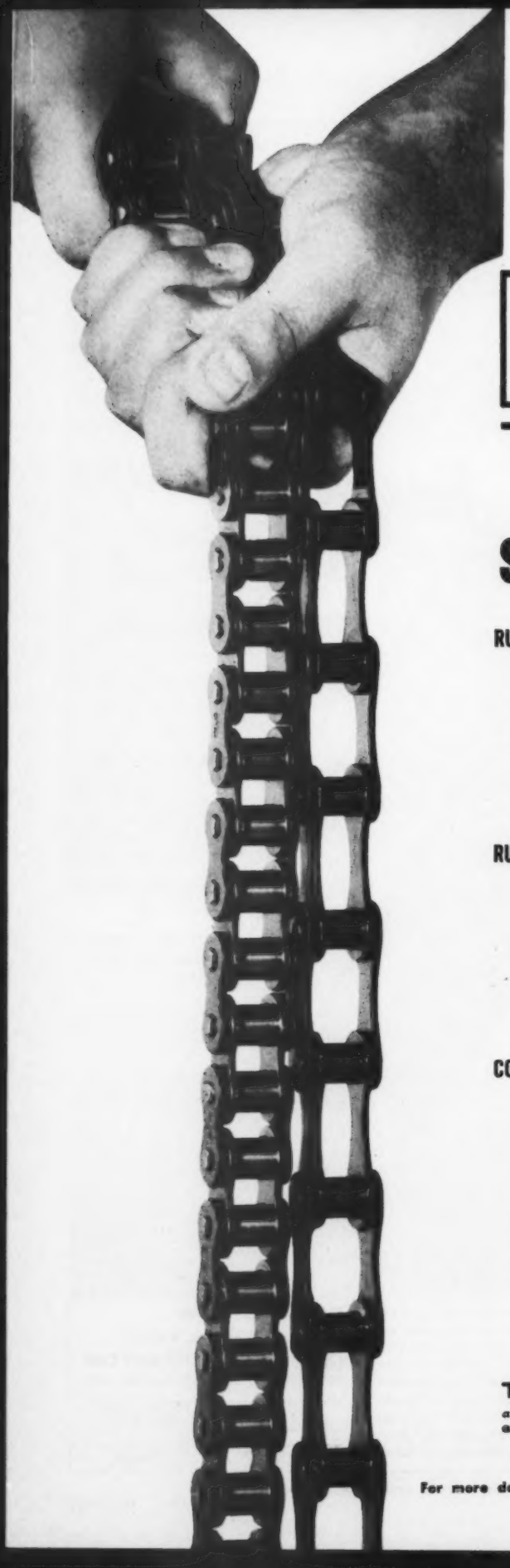


This Chain Contains ALL the Oil it will EVER Need!

IT'S WHITNEY MSL* SELF-LUBRICATING CHAIN

RUNS CLEAN BECAUSE IT'S SELF-LUBRICATING

Whitney MSL* Power Transmission and Conveyor Chain is lubricated for life by oil-impregnated sintered steel bushings. In operation, the lubricant expands and flows over all vital bearing surfaces; when the drive stops, the lubricant contracts and is reabsorbed by the bushing. This cycle continues throughout the chain's service life. *No additional oil is required.* This means clean running chain—no contamination of product or materials in food, textile, paper, chemical and packaging industries!

RUNS LONGER BECAUSE IT'S SELF-LUBRICATING

MSL* Chain outlasts conventional pre-lubricated chain as much as 5 to 1 in severe operating requirements. Built-in lubrication at the 3 critical wear points—Pin, Plates, and Sprocket Engagement—solves a major chain problem: more damage is caused by faulty lubrication than by years of normal service. Highest material standards, advanced manufacturing processes and self-lubrication are combined in MSL* Chain to give you longer service life.

COSTS LESS TO USE BECAUSE IT'S SELF-LUBRICATING

By eliminating the need for manual lubrication or lubricating devices, Whitney MSL* Self-Lubricating Chain ensures *lower installation, maintenance, and use cost.* Whitney MSL* Chain conforms to A.S.A. Standards and is completely interchangeable with any similar pitch chain.

Get complete details on this outstanding chain today. Ask your nearby Whitney Chain Distributor, or write for Bulletin MSL B-2.

*Maximum Service Life

THE WHITNEY CHAIN COMPANY
a subsidiary of FOOTE BROS. GEAR AND MACHINE CORPORATION
4545 S. Western Blvd., Chicago 9, Ill.

POWER TRANSMISSION DRIVES

For more data circle 125 on Post Card

For more data circle 126 on Post Card

Recent Expansions in the Industry

Lightweight Grades From Longview's New Fourdrinier

Production of toweling and lightweight grades of paper are rolling off Longview Fibre Co.'s newest 95-in. fourdrinier machine at Longview, Wash.

The company's new No. 8 machine relieves larger machines of these lightweight grades. It is expected to produce about 50 tons per day. The present daily tonnage at the mill averages about 1,025 tons. The No. 8 machine is expected to increase the average to about 1,100.

A Beloit Iron Works machine, the No. 8 is located adjacent to a sister machine, No. 3, and designed to provide a good deal of interchange of parts and equipment which in turn will permit a considerable amount of flexibility of operation. A three-man crew will operate the new unit.

The wire on the No. 8 is 95 in. wide by 80 ft., ½ in. in length. Slice width is 90 in. between pondsides. Breast roll is 24-1/16-in. dia. by 98-in. face.

Headbox and slice is of latest design, having a hinged top and arranged so that stock level is maintained at the desired height by air

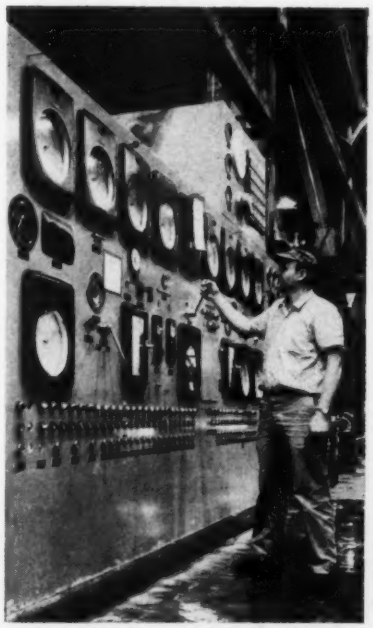
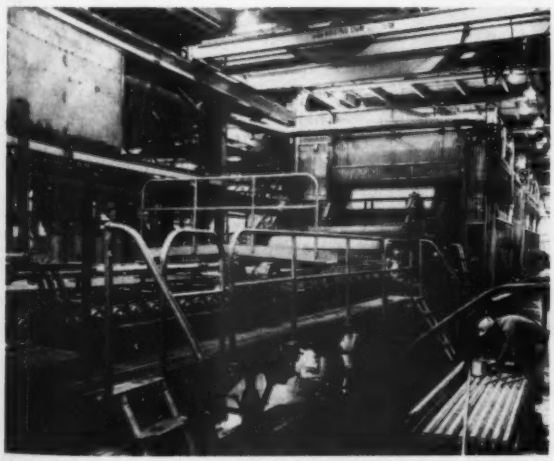


Photo to right shows machine tender increasing the stock flow to the headbox on the machine.



Pictured above is Longview Fibre's newest machine (No. 8) which produces toweling and other lightweight grade papers at a 50-ton-per-day rate. Three men comprise the operating crew.

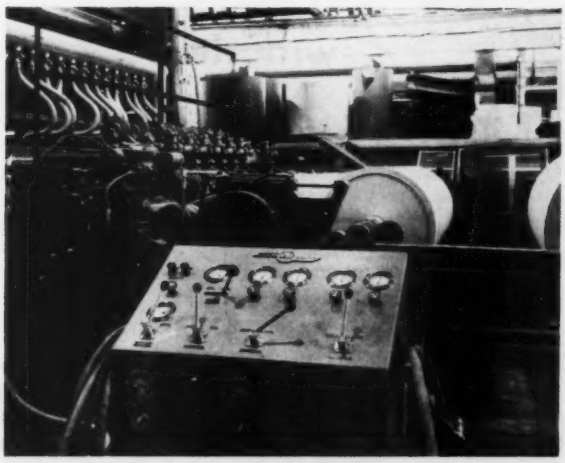


Photo to right shows operator's console and duplex slitting arrangement on the No. 8. This arrangement at the reel affords pre-setting specific trim widths while machine is running.

pressure. The slice is adjustable vertically and horizontally with respect to the breast roll. The fourdrinier is removable as a unit with all table rolls, inside wire rolls, save-alls and suction boxes being removed with the fourdrinier structure. It is designed for future addition of a shake.

The dryer section includes a total of 24, 48-in. dia. paper dryers designed by Beloit to operate at up to 160 psi. Dryer grouping is divided into two sections with a 60-in. dia. creping dryer positioned between. First section has eight dryers and the second section has 16. The entire dryer section is enclosed by a J. O. Ross closed hood. Motor-operated doors automatically expose the full length of dryer sections when a break in the sheet occurs.

The machine requires no rewinder. A constant speed reel drum, 24 in. in dia., is provided and is designed to wind up a reel 60 in. in dia. A duplex slitting arrangement affords presetting specific trim widths while the machine is running. The equipment consists of two slitter shafts each mounting 11 slitter bands which includes trim bands. Shafts mounted on anti-friction bearings contained in dumbbell housings are individually handled as a complete assembly for purpose of band grinding.

Firms contributing labor or equipment for the installation include: Beloit Iron Works, Mixing Equipment Co., Improved Paper Machinery Co., Stebbins Engr. Co., Ross Engr. Co., K. T. Henderson Inc., Hoffman Engr. Co., Rosendahl Corp., Tide Co., General Electric, J. E. Hazeltine, Borg-Warner, Goulds Pumps Inc., Nash Engr. Co., Bauer Bros., Foxboro Co., and Taylor Instrument Co.

Longview's continuing expansion program has already ordered a No. 9 fourdrinier machine from Beloit Iron Works. No. 9 is expected to be in production during the second quarter of 1961. It is planned to boost production averages to approximately 1,250 tons per day.

Carus Chemical Opens Research Lab

The Carus Chemical Co. Inc. of La Salle, Ill., a sole American producer of potassium permanganate, has announced the opening of its new End-Use Research Laboratory to develop and evaluate processes using the company's products in the paper and pulp industry.

Air and stream pollution abatement techniques are being pursued particularly for the control of hydrogen sulfide and mercaptans common to the pulp and paper mills.

Low-cost technical grade potassium permanganate is now being considered for bleaching pulp.

Technical personnel of the new Laboratory are available for consultation and field assignments.

Federal to Spend $12 Million on Expansion

An expansion program costing about $12 million has been announced by Federal Paper Board Co. Inc. The program is centered around the Richmond, Va., Seaboard Mill of Federal's Manchester Board & Paper Co. Div.

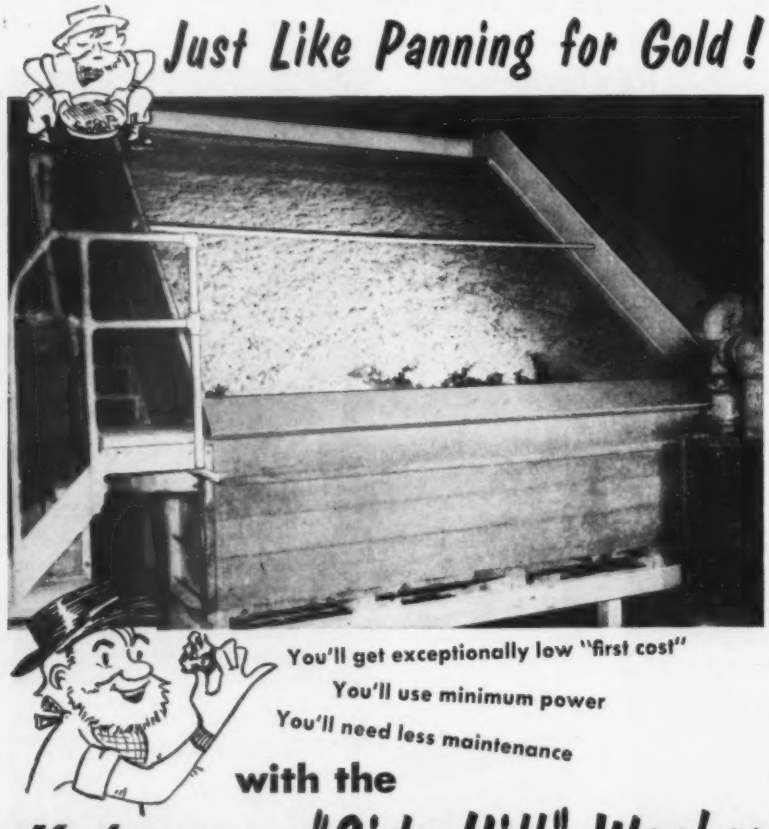
The program involves the installation of a cold soda process to produce pulp from hardwoods; an additional machine for the production of paperboard from bleached virgin pulp; and the construction of a carton converting plant.

Early 1961 is the date set for the new carton plant and the pulping process. The new paperboard machine will be installed and operating before the end of 1961. It will have an annual capacity of about 60,000 tons.

Bulkley Dunton Opens West Coast Office

Bulkley Dunton Pulp Co. Inc. will soon open a new sales and distribution office in San Francisco. The new office will function in the same manner as

(Continued on page 291)



You'll get exceptionally low "first cost"
You'll use minimum power
You'll need less maintenance
with the
Kalamazoo "Side Hill" Washer

These practical slide washers give a better and more effective wash job than other washing methods. They may also be used as thickeners and savealls. These units are designed by Kalamazoo engineers — experts in serving the paper industry for more than 90 years. Our experience enables us to completely prefabricate the units of top quality materials. Installation supervision can be furnished.

Laboratory size units are available for experimental purposes in determining the proper angle and screen mesh.

Write today for information on capacities and cost estimates.

WOOD TANK DIVISION
Kalamazoo TANK & SILO CO.
760 HARRISON ST.
KALAMAZOO, MICH.

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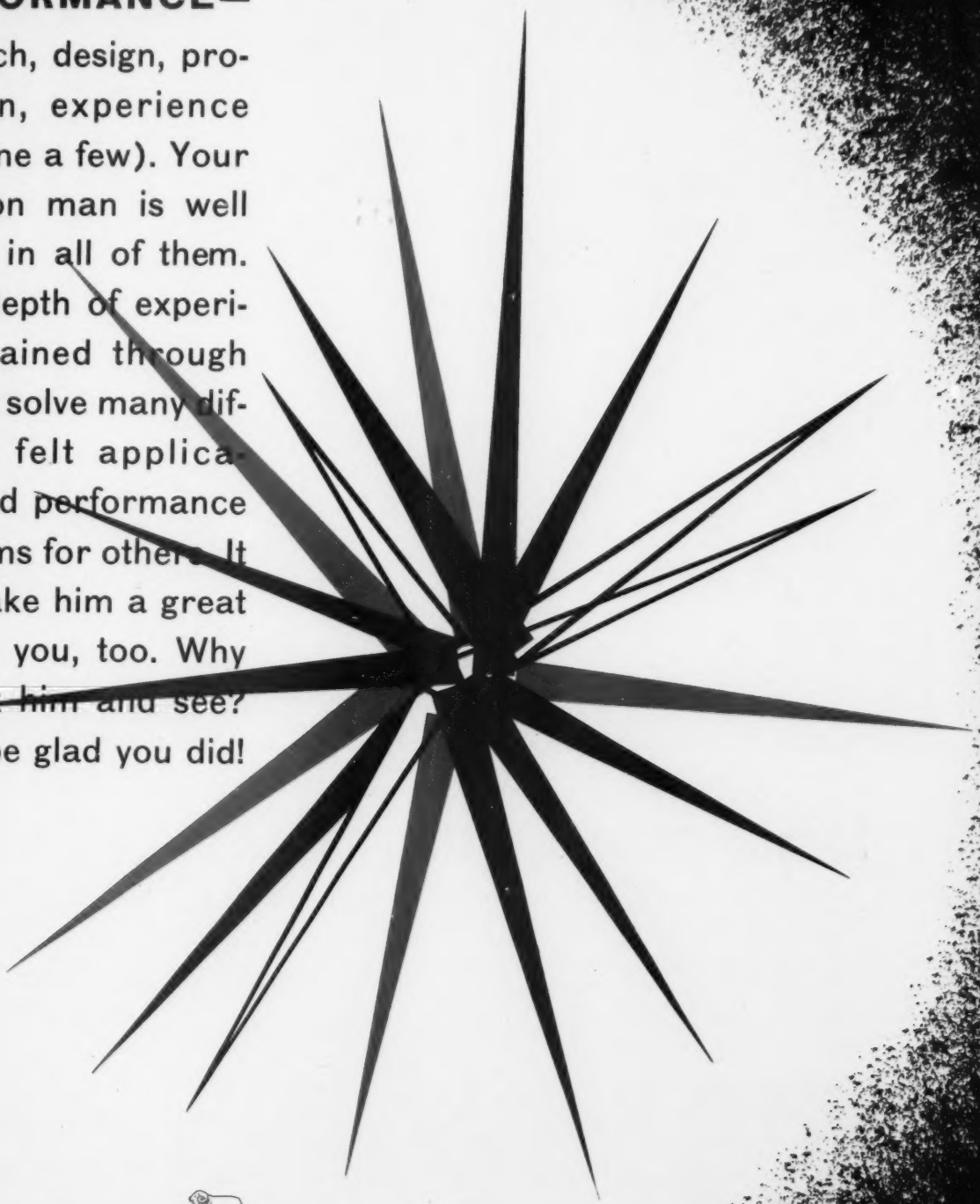
[illegible] MANY [illegible] POINTS THAT [illegible]ETERMINE FELT [illegible]ERFORMANCE—

research, design, production, experience (to name a few). Your Appleton man is well versed in all of them. It's a depth of experience gained through helping solve many different felt application and performance problems for others. It can make him a great help to you, too. Why not ask him and see? You'll be glad you did!

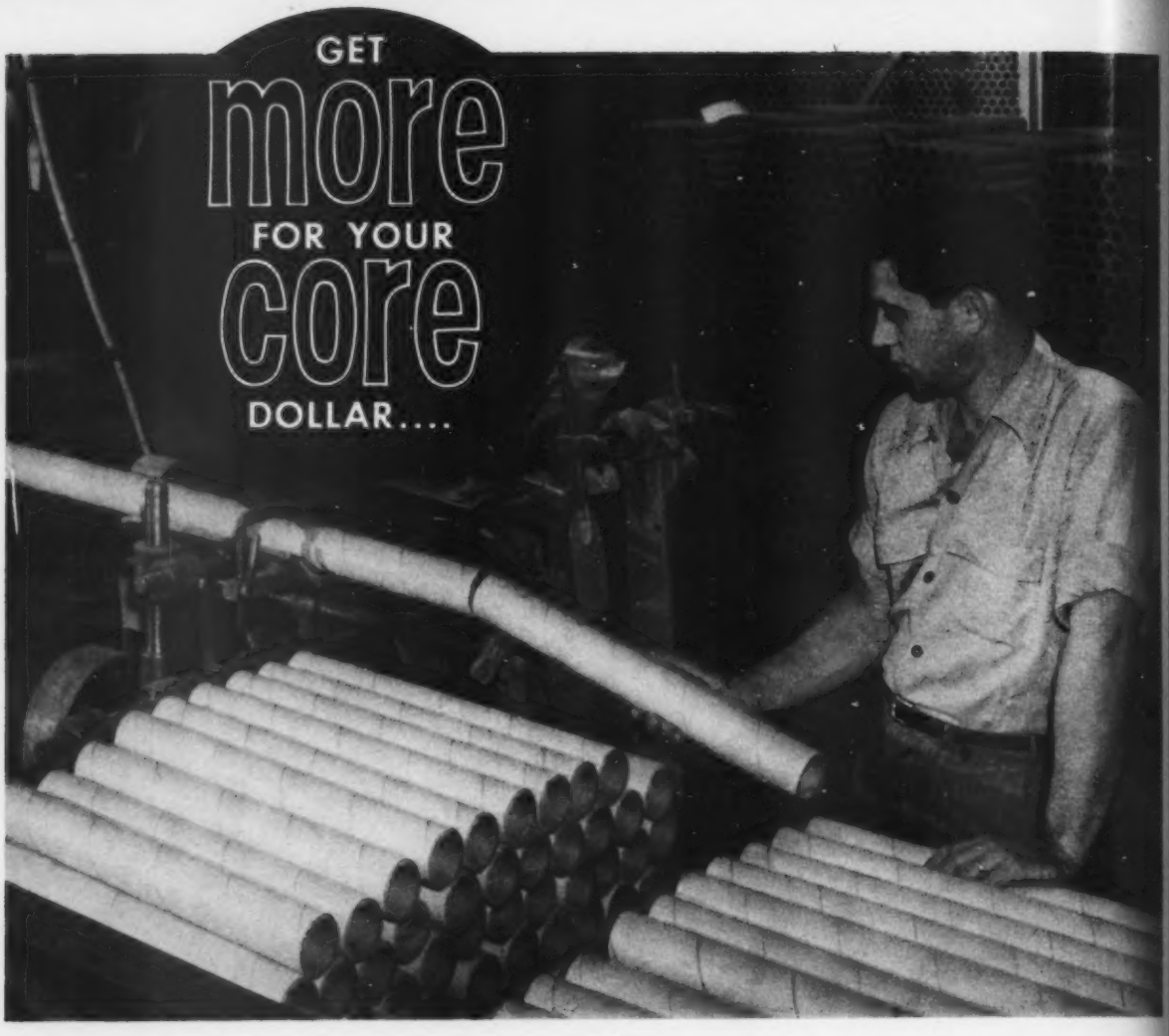


AP-PLY FELTS

Appleton Woolen Mills

Working With The Paper Industry

Appleton, Wisconsin

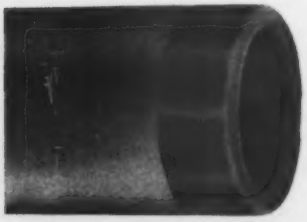


Sonoco controls quality from start to finish!

All Sonoco cores are products of a completely integrated manufacturing operation. Every production step is subject to rigid quality control. This assures economical cores of uniform quality —for dependable, trouble-free performance.

Regardless of your need in cores—returnable or non-returnable, with or without metal ends—Sonoco offers you a complete range of sizes with tolerances and crush strength to meet your most demanding requirements.

Let Sonoco's 60 years of experience, coupled with a program of unending research, help you to get more for your core dollar. Core specialists are located at Sonoco plants from coast to coast to personally assist you with your problems. Call or write today!



SONOCO

Paper Mill Cores

SONOCO PRODUCTS COMPANY 559

Main Office—HARTSVILLE, S. C. • MYSTIC, CONN. • AKRON, IND. • LOWELL, MASS. • PHILLIPSBURG, N. J. • LONGVIEW, TEXAS • PHILADELPHIA, PA. • FREMONT, CAL. LA PUENTE, CAL. • ATLANTA, GA. • GRANBY, QUEBEC • BRANTFORD, ONTARIO • MEXICO, D. F.

Main Office—Hartsville, S. C. • Mystic, Conn. • Akron, Ind. • Lowell, Mass. • Holyoke, Mass. • Phillipsburg, N.J. • Longview, Texas • Philadelphia, Pa. • La Puente, Cal. • Fremont, Cal. • Atlanta, Ga. • Brantford, Ont. • Granby, Quebec • Mexico, D.F.

For more data circle 129 on Post Card

For more data circle 130 on Post Card

News of the Industry . .

Bulkley Dunton's branch office in Kalamazoo

Robert M. Van Sant has been appointed as manager. He will also be responsible for the sale of fourdrinier wires manufactured by the United Wire Works of Edinburgh, Scotland, and also Horsehead Titanium Dioxide produced by the New Jersey Zinc Co. He has been with Bulkley Dunton for nine years.

J. M. Huber Opens New Offices

The industrial products department of J. M. Huber Corp. has opened new offices at 1234 Melanie St., Baton Rouge, La.

The new office will service customers in the rubber and paper industries in the south-central section of the country, and will be headed by Laurice W. McCallum.

Michigan Carton Forms New Division

The formation of a new division to be known as the Egg-Cel Division has been announced by Michigan Carton Co. of Battle Creek, Mich.

This division will promote and sell the company's new line of pictorial egg cartons to egg packers and volume users of egg cartons. Harold G. Hanselman, a former sales representative for Michigan Carton will be manager of the Division.

As an initial move toward providing localized service, the acquisition of the manufacturing facilities and distribution site of the Caldwell Packaging Co. of Atlanta, Ga., by the Egg-Cel Division has also been announced. Fred March, former manager for Caldwell, will manage the Georgia plant for Michigan Carton.

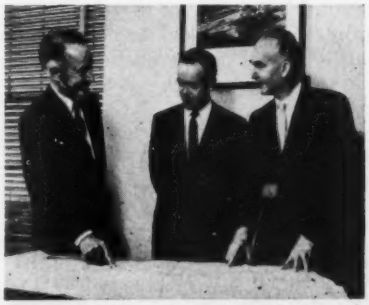
New Offices for Ross-Midwest-Fulton

Ground has been broken recently for new offices of the Ross-Midwest-Fulton Division of the Midland-Ross Corp. Location of the new offices are in Kettering, Ohio, near Dayton. They are scheduled to be completed on or before July 15, 1960, and will house engineering and sales personnel ot the division.

Multi-Million-Dollar Expansion Program Set for Buckeye Cellulose

Buckeye Cellulose Corp. has announced a multi-million-dollar expansion program which will increase capacity by 33,000 tons—a 13 per cent increase to its present capacity of 260,000 tons a year. This is the third time within five years that Buckeye has reported capacity increases at its Foley, Fla., mill.

The new program will consist of internal manufacturing revisions and the addition of new equipment in various departments. The woodyard will be expanded and extra chipping equipment will be installed. Two new digesters will be added to the existing line of 14. Plans to increase the efficiency and capacity of its unique double-screening system, which was put into operation in 1959 for the removal of dirts and chives prior to bleaching, will also be made. The screening department changes include addition of new screens, rearrangement of existing screens and installation of added instrumentation for improved control. Additional pulp drying capacity will be obtained by modification of Buckeye's newest fourdrinier.



Plans for expansion program at the Foley, Fla., mill are being discussed by (left to right): Paul Honey, vice president and manager of Buckeye's pulp processing division; Lee Wakeman, manager of the plant; and Robert F. Ganoung, director of engineering.

Black-Clawson To Rebuild Machine for Union Bag-Camp

A contract for rebuilding the fourdrinier of No. 3 paper machine in the Savannah, Ga., mill has been awarded by Union Bag-Camp Paper Corp. to the Black-Clawson Co.

The No. 3 machine manufactures kraft bag paper in the 40- to 60-lb. range at an average rate of 180 to 200 tons per 24 hrs.

The new unit will be a 236-in.-wide Hydroflyte cantilever fourdrinier designed for quick wire change. Among its special features will be the new Uni-Flyte, air-operated wire guide.

Construction of the fourdrinier is now underway at the Paper Machine Division of Black-Clawson in Watertown, N.Y.

Gulf States Establishes E-Z Pak Co.

Jack Warner, president and chairman of the board of Gulf States Paper Corp. has announced the establishment of the E-Z Pak Co., located in Maplesville, Ala.

The new company will be operated as a subsidiary to Gulf States and will produce a complete line of folding paper cartons, trays and plates for such products as ice cream, frozen foods, bakery goods, and a variety of

non-food items requiring high-quality and flexible packaging. Paper products from both the Tuscaloosa and Demopolis plants will furnish the raw materials for the new mill.

Production at Maplesville is planned for early 1961 and will eventually employ about 150 people. Charles L. Everett has been named operations manager.

Arabol To Open New Plants

Henry E. Weingartner, newly elected president of the Arabol Mfg. Co. has announced plans for expanding production facilities of the 75-year old adhesives company. Included in these plans is the opening of new plants in Ohio and Georgia and construction of another unit at a third, undisclosed, location. Steps to improve the production capabilities of the company's existing plants will also be underway.

The new plant in Marietta, Ga., was formally opened last month. This plant was designed to permit straight flow processing from raw materials to finished adhesives.

Early this summer, the Delaware, Ohio, plant will commence construction.

Attractive, Corrosion-Resistant Glazed-Tile Effluent and Water Treatment Tanks

As the final step of construction, Stebbins workmen carefully wash down the exterior of the tanks with acid.

In this view of tank floors under construction, note the clean, smooth joints – the mark of good workmanship. Note the variety of tile shapes. Horizontal and vertical steel reinforcing is shown in the walls which will be solidly filled with concrete as work progresses.

Complete Service — Design, Installation, Maintenance

WRITE FOR BULLETIN AET-59

SEMCO

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Specialists in Design, Installation and Service of Lining and Tile Tanks

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Coming Events

TAPPI

August 22-24 — 14th Alkaline Pulping Conference, Multnomah Hotel, Portland, Ore.

August 24-26 — Forest Biology Symposium, New Washington Hotel, Seattle, Wash.

September 27-29 — 11th Testing Conference, Pantlind Hotel, Grand Rapids, Mich.

October 6-7 — 5th Deinking Conference, Conway Hotel, Appleton, Wis.

October 17-19 — 15th Plastics-Paper Conference, Hotel Syracuse, Syracuse, N. Y.

October 23-27 — 15th Engineering Containers Conference, Royal York Hotel, Toronto, Canada.

October 23-27 — 15th Engineering Conference, Robert Meyer Hotel, Jacksonville, Fla.

PIMA

September 1-3 — New York-Canadian Division (Fall Meeting), Saranac Inn, Upper Saranac Lake, N. Y.

September 22-24 — Northeastern Division, Poland Spring House, Poland Spring, Maine.

September 22-23 — Northwestern Division, (Fall Meeting), Northland Hotel, Green Bay, Wis.

September 30-October 1 — Pennsylvania-New Jersey-Delaware Division (Fall Meeting), Pocono Manor Hotel, Pocono Manner, Penn.

October 7-8 — Connecticut Valley Division (Joint Fall Meeting with N. E. TAPPI), Hotel Northampton, Northampton, Mass.

October 12-14 — Southern Southeastern Divisions (Joint Fall Meeting), Williamsburg Inn and Williamsburg Lodge, Williamsburg, Va.

OTHER MEETINGS

July 19-21 — Western Packaging & Materials Handling Exposition, Los Angeles Pan Pacific Auditorium.

August 7-13 — 11th Annual Industrial Research Conference, Harriman Campus Arden House, New York, N. Y.

August 8-19 — 9th Pulp and Paper Statistics Course, Brevard College, Brevard, N. C.

August 14-17 — 4th National Heat Transfer Conference and Exhibit, Statler Hotel, Buffalo, N. Y.

August 29-September 10 — Fifth World Forestry Congress, University of Washington, Seattle, Wash.

September 6-9 — 1960 Summer Meeting of the Technical Section of the Canadian Pulp and Paper Association, Banff Springs Hotel, Banff, Alberta.

September 8-11 — Tri-Regional Conference, Atlantic Division, National Association of Secondary Material Industries (NASMI), Saranac Inn, Saranac Lake, N. Y.

September 26-30 — 15th Annual Meeting, Instrument Society of America, New York Coliseum, New York, N. Y.

October 17-21 — 48th Annual National Safety Congress, Pick-Congress, Chicago 11, Ill.

NAMES *in the* NEWS

St. Regis Paper Co.

Benton R. Cancell, executive vice president in charge of operations of St. Regis, has been elected a director of the company. Cancell had been president of Rhinelander Paper Co. which joined St. Regis in 1956.

T. Marcus McClellan Jr. has been elected a director of St. Regis. He is president of Nifty Mfg. Co. division of St. Regis.

W. Irving Osborne Jr. was elected a director of the company. He is chairman of the board of Cornell Paperboard Products Co. division of St. Regis.

Philip B. Duffy, who is executive vice president of the St. Regis Container Division, was named vice president-corrugated containers.

John A. McDermott, general manager of all pulp and paper manufacturing, has been named vice president in charge of pulp and paper manufacturing.

William E. Caldwell has been appointed as senior vice president of the company's Cornell Paper Board Products Co. Division and general manager of the Cornell operations at Milwaukee, Wis. He will succeed Arthur Miller who retired from this position.

T. Cecil Davis, presently assistant treasurer of St. Regis, has been named resident manager of the St. Regis mill at Pensacola, Fla. He will succeed Caldwell.

Thomas Gerace has been appointed as resident manager of the company's printing paper mill at Bucksport, Me. He will replace Fred C. Goodwill who has resigned from the company.

J. P. Corbin, who has been assistant to the general manager of the Printing Paper Division, will replace Gerace as resident manager at the Sartell Mill.

Milprint Inc.

Paul G. Hayden, plant superintendent at De Pere has been named plant manager.

Gene Antisdel, formerly De Pere plant manager, has become manager of Milprint's expanded South San Francisco, Calif., plant.

Gene Fitzgerald, Milprint Oversea's Australian representative, has been appointed De Pere plant superintendent, replacing Paul Hayden.

W. E. Caldwell

W. I. Osborne Jr.

B. R. Cancell

T. C. Davis

T. M. McClellan Jr.

G. Fitzgerald

P. G. Hayden

G. Antisdel

Brown Co.

Leonard J. Pierce Jr. of Wayland, Mass., has been selected and named as Brown Co.'s new president. Prior to assuming his new position with Brown, Pierce had been serving Penobscot Chemical Fibre Co. in Old Town, Me., as vice president-operations.

Henry F. Scheetz Jr. has been named chairman of the board. He will succeed Laurence F. Whittemore, who has asked to be relieved of his duties because of health.

Sheetz has been assistant to the chairman of Brown Co. as well as a member of its board since 1959. In his new position, Sheetz will take immediate charge of direction of the company, which has its principal plants in Berlin, N. H., and in Gorham, N. H., and with subsidiary plants at North Stratford, N. H., Corvallis, Ore., and Birmingham, Ala.

Sutorbilt Corp.

Sune V. Malmgren has recently assumed his new position as senior sales engineer in charge of sales and application engineering for the sewage treatment field.

In his new position, Malmgren will handle all requests for technical information, quotations and similar related matters concerning Sutorbilt's sewage treatment equipment. Prior to his new promotion, he was serving as area sales engineer in Sourthern California.

Paul M. Hollinger has been appointed as general sales manager of the corporation. His appointment is part of a major move to strengthen the company's sales activities and provide effective coverage for its expanding markets. He will plan, organize, direct and control all marketing efforts and activities and will establish objectives, policies and procedures.

Appleton Woolen Mills

F. H. Singletary has been appointed as Southern sales representative. His territory will cover Mississippi, Arkansas, Texas, Louisiana and parts of Alabama and Tennessee. In addition to his felt and wire sales experience, Singletary has had many years of paper mill supervisory experience.

International Paper Co.

James H. Watson has been named assistant power plant engineer for the Southern Kraft Division. He has been in charge of construction of a sawmill

in Chelatchie Prairie, Wash., for the company's Long-Bell Division during the past year.

Billy R. Turner will now take on new duties of personnel and safety director for the company's Mobile Bag Factory. Turner was previously assistant personnel director of International's Georgetown mill.

Donald B. Pooley has been appointed as west coast manager for International's corrugated shipping container and multiwall bag sales. Pooley had been serving as manager of West Coast Container Sales.

R. R. Worthington will now assume the position of assistant general manager of the Bagpak Division. Worthington has been divisional sales manager for Bagpak. He will be succeeded by R. A. Gair Jr. C. H. Crain has been named to replace Gair, as West Coast regional sales manager. C. F. Evans of the Atlanta sales office will assume Crain's former sales duties in the Chicago sales office.

Robert J. Stewart Jr. has been appointed as resident manager of International's Single Service Division plant at Versailles, Ky. James V. Horton has been named as plant superintendent for the same facility.

Richard C. Doane, president, has announced the election of Wallace K. Graves, George H. Rand and John L. Tower as vice presidents of the company.

Graves will serve as vice president in charge of the sale of primary grades of paper and paperboard. He was previously serving as assistant general sales manager for the company in 1958.

Rand, whose appointment as manager of manufacturing for the company's Northern Division was announced last January, will continue to serve in that capacity.

Tower will continue to serve in the capacity of director of public relations. He will have added responsibility as director of the company's advertising and sales promotion departments.

The company also announced that the board has appointed Edward Z. King Jr., who has been an assistant treasurer, to the new corporate office of comptroller and John S. Maxwell as an assistant treasurer.

Howard N. Atwood Jr. has been named manager of International's milk container plant now under construction at Framingham, Mass. Raymond E. Cihak has been appointed as plant superintendent for the Framingham operation.

Edwin L. Rivenbark has been promoted to pulp mill engineer for the Southern Kraft Division. He had been serving as assistant division power engineer since 1956.

Wisconsin Wire Works

William N. Dreyer has been appointed to the position of works manager. Dreyer has been associated with the company as an engineer for about a year. Prior to this, he served as professional engineer with the Bolta Products Division of General Tire & Rubber Co. and specialized in the development of synthetic filaments.

Link-Belt Co.

With the retirement of David W. Stevens after 48 years of service, Edward L. Mills has been appointed to succeed him as Link-Belt's district manager at Huntington, W. Va., Mills was appointed district manager at Duluth in 1958.

Earl W. Habberstad has been appointed to succeed Mills as district manager at Duluth. He has been sales representative in Duluth since 1951.

Wausau Paper Mills Co.

The following manufacturing and sales personnel appointments have been announced: P. J. Noel, from superintendent of finishing and customer service to sales service and converting sales; Richard Jacobus, from technical assistant to the paper mill superintendent to assistant paper mill superintendent; Charles Rainville, from finishing room supervisor to finishing room superintendent; and LeRoy Strek, to the finishing room supervisory staff.

Dr. E. H. Merz

J. C. Barthel

Continental Can Co.

J. C. Barthel has been appointed as general manager of the research and development department, Bondware Division of Continental Can Co.

Dr. Edmund H. Merz has been appointed as director of the materials formulation and evaluation department of the General Packaging Research and Development Division of Continental Can Co.

H. Merrill Goodwyn has been named southern regional manager for the bag and paper operation of the Containerboard & Kraft Paper Division. He will replace James H. Quinn, who has resigned from the company to go into business for himself.

William Donaldson, formerly a Pacific Coast sales representative for the Division, will succeed Goodwyn as Dallas district sales manager.

Billy M. Googe has joined the company as a salesman in the South-Eastern region, operating out of the Southern Pines office.

B. C. Betner Jr., vice president of the Flexible Packaging Division of Continental has announced the following appointments within the division: Martin L. Schechtman as manager of laminated products; Fred S. Hinkle as manager of paper products; Fred Winslow as manager of film products; R. George Buchanan as product sales manager of paper; Alex W. Scholp as product sales manager of laminations; Walter C. Curtis as product sales manager of films; Thomas A. Porter as manager of product development of laminations; and Norman S. Hewitt as manager of product development of films.

General Aniline & Film Corp.

Earl R. Wilbur has been transferred from the New England branch to the New York-Philadelphia branch of the Dyestuff and Chemical Division. He will now service the accounts formerly covered by Kenneth M. Prytherch who was recently promoted to the company's Azo-Condensation department and assigned the duties of product engineer in New York.

Alton Box Board Co.

R. W. Shaver has announced his resignation as vice president in charge of manufacturing.

Shaver will make his headquaters at his dairy farm home at Dover Plains, N. Y., where he plans to do general paper mill management consulting work and devote more time to his general interests in the east. He will be particularly interested in appraisal and consulting work for the rehabilitations of mills that need improvement in their operations.

Arabol Mfg. Co.

In the company's observance of its 75th anniversary the election of Henry E. Weingartner, executive vice president, to president has been announced.

It was also announced that William A. Weaver, president, will become the adhesive manufacturing company's board chairman.

Weingartner has been executive

(Continued on page 296)

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Names in the News . . .

vice president of the company since 1957. His entire business career has been spent with the company, whom he joined in 1931 as a chemist.

Weaver is also a director of the Arabol Mfg. Co. Ltd., a wholly owned English subsidiary. He joined the company in 1938 as treasurer and was elected president in 1943.

John W. Bolton & Sons Inc.

L. H. Flanders has been appointed a sale representative of John W. Bolton & Sons and the Emerson Mfg. Co. Division. Flanders will cover the California territory and will make his residence at 3711 Fruitvale Ave., Oakland 2, Calif.

Consolidated Water Power & Paper Co.

E. G. Paulson has joined the engineering department of Consolidated and will serve as a mechanical engineer. He was previously associated with Allied Paper Co.

John Z. Segal has joined the Ahdawagam Division as assistant to the general manager. He was sales manager for Artistic Carton Co. of Elgin, Ill., prior to joining Consolidated.

Wayne Davis has been appointed pipe fitter foreman at the Biron Division. He will succeed Charles Stolp Sr. who recently retired.

Ronald Gielczyk has joined the Biron Division's technical department as a process engineer. Prior to joining the company, Gielczyk had been associated with Kimberly-Clark at Niagara Falls.

Chas. T. Main Inc.

James M. Forrester has recently joined the pulp and paper group of Chas. T. Main Inc., Engineers. Prior to becoming associated with the company in April 1960, Forrester was a project engineer at Rust Engineering in Pittsburgh.

Mead Corp.

William B. Jensen, district manager and Richard E. Kearns, manufacturing manager of the Grand Rapids plant of Mead Containers Division have announced their retirement. Jensen and Kearns, along with William H. Stehouwer, founded the Grand Rapids Container Co. in 1944, after a long association with the American Boxboard Co. where Jensen had been sales manager.

Jensen had served as president, Kearns as vice president, and Stehouwer as secretary of the firm they founded until it was sold to Mead Corp. in July 1958. Stehouwer resigned from active management of the firm in 1959.

The company also announced that Jack A. Jensen will now assume the position as the new district manager. He will continue to serve as sales manager for the plant in addition to his new duties as district manager.

Samuel M. Langston Co.

Alvin C. McCully has moved from his Camden, N. J. office to South Shaftsbury, Vermont, a suburb of Bennington. He will now have major responsibility for all of the New England, Eastern Canada and most of New York State.

Necrology . . .

Norman W. Eber

Norman Eber was president and owner of the Winchester Paper Co. in Ashuelot, N. H. He was associated with the Erving Paper Mills before he became owner of the Winchester Co. He was also a member of the American Paper & Pulp Association and the Tissue Association.

Edgar C. B. Kirsopp

Edgar Kirsopp was chairman of the board of the Carter Paper Co. and a director of several large American companies. He was vice chairman of the board of Rohm & Haas Chemical Co., president of the Southern Resin & Chemical Co., and a director of the National Drug Co.

Oscar F. Simpson

Oscar Simpson was founder and former president of the Paper & Cordage Co. in Milwaukee, Wis. Simpson founded the Paper & Cordage Co. in 1936. The company was purchased by the Dralle Paper Co. after Simpson's retirement.

Dean King Phillips

Dean King Phillips was general manager of the Diamond Match Division, Diamond National Corp. Prior to his promotion to general manager, Phillips had been director of public relations for the corporation. He had previously been director of public relations for the Gardner Board & Carton Co. before its merger with Diamond National.

Karl F. McGrann

Karl McGrann was vice president in charge of sales at Ontario Paper Co. Ltd., Thorold, since 1955. He joined the company at Thorold in 1930. He was also a vice president of Quebec North Shore Paper Co., a subsidiary of Ontario Paper Co.

Merle F. Koblish

Merle Koblish had been sales manager at Allied Chemical's General Chemical Division. He was responsible for sales of basic industrial chemicals with the division for 31 years.

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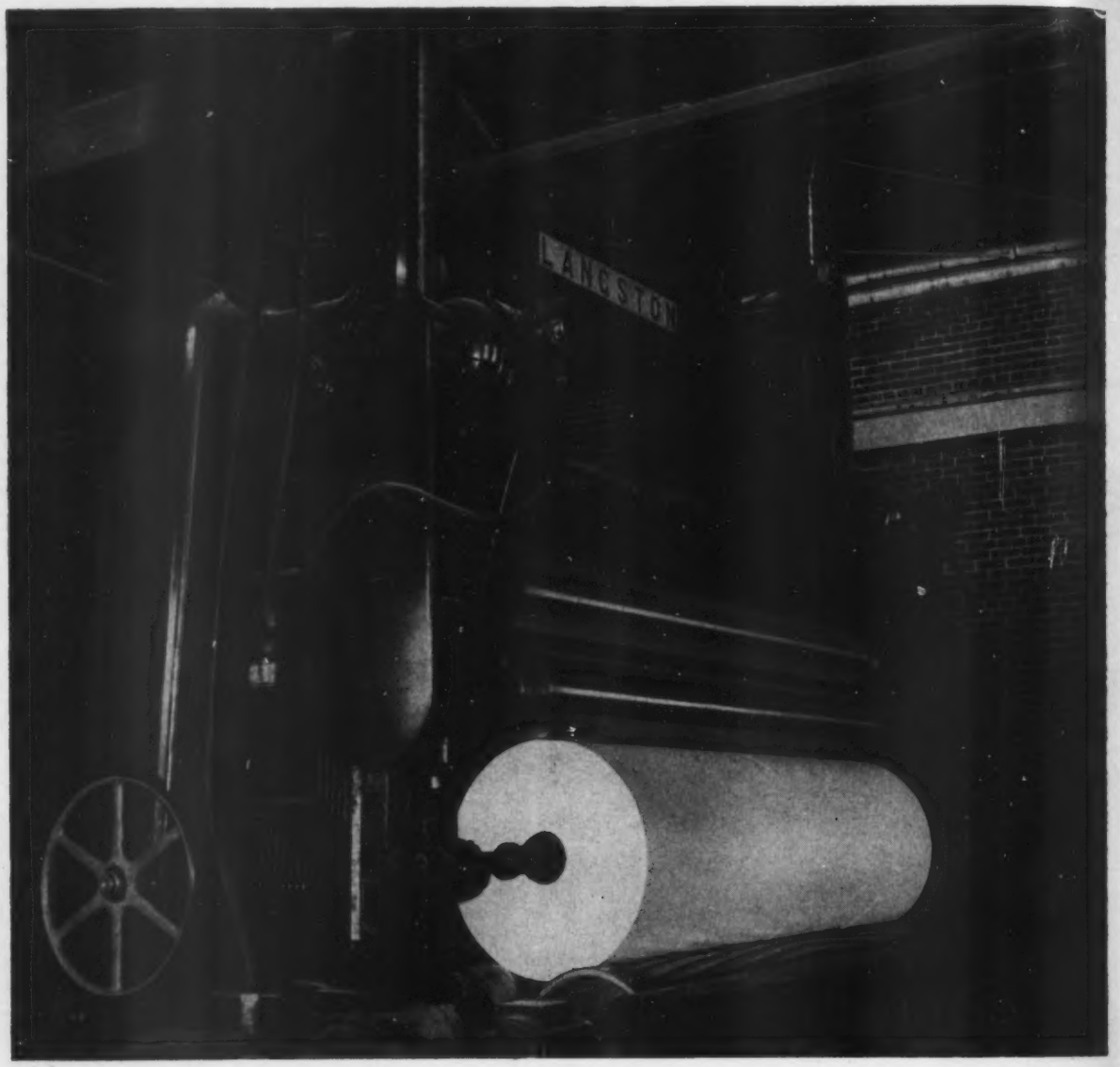

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FOREIGN ABSTRACTS

The Swiss paper industry

Switzerland has 19 paper mills, and some of these also manufacture board. In the main, however, board is produced by five cylinder-board mills and by 12 wet-machine board mills. There are only 3 pulp mills. Switzerland employs 10,000 workers in the pulp, paper and board industries. Despite the fact that the actual number of mills has not increased within the past 58 years, expansions and modernizations have taken place, and there has been a ninefold increase in production (up to 1958). In that year, 287,000 tons of paper and 100,000 tons of board were manufactured, together with 90,000 tons of chemical pulp (largely sulfite) and 105,000 tons of mechanical pulp.

Kraft pulps are imported from Austria, Finland and Sweden. The per capita consumption of paper in 1958 was 58 kilos; that of board was 20 kilos. Thus the domestic production is sufficient to meet the requirements of the country. Of the total paper production, 25 per cent is newsprint, 25 per cent consists of other printing grades, 25 per cent consists of wrapping paper, 15 per cent represents writing and envelope grades and 10 per cent are specialty papers. Switzerland, although very heavily forested, imports about 40 per cent of its pulpwood from Finland; these figures are for 1958 and 1959. Pulpwood prices have increased very heavily within the past 20 years; thus, there has been a pulpwood price rise of 190 per cent, while paper prices have risen 90 per cent. The European Common Market will probably introduce heavy competition from the Scandinavian countries.

Werner Lanz. *Textil-Rund-schau* **14**, 687 to 689 (1959) (in German) through *Abstr. Bull. Inst. Paper Chem.* **30**, 1150 (1960). (1960).

Maintenance coating materials

Methods used in testing and evaluating various coating materials used in the pulp and paper industry are described, and the results are discussed briefly. Chlorinated rubbers and epoxy resins were shown to give valuable coatings under suitable conditions.

R. G. Nickells. *Can. Pulp Paper Ind.* **13**, No. 4, 64, 66, 68, 70, 72, 74, 76 (1960).

Determination of the water retention by pulp

The authors have further simplified the techniques for determining water retention, originally devised by Jayme [cf. *Wochbl. Papierfabrik.* No. 6, 187 (1944)] which, since its inception, has undergone a series of modifications. In the present case, the moist pulp, after carefully controlled centrifugation, was dried in the original nickel sieve that was used in the centrifuging process. This eliminates the more cumbersome process of using weighed watch glasses. The results showed excellent precision and also checked those found by use of an older procedure.

Georg Jayme and Günther Hahn. *Das Papier* **14**, 138 to 139 (1960) (in German).

Pulping bamboo "dust"

Soda cooks were carried out with the dust that is formed when bamboo is chipped. Yields were 45 per cent, when the digestions were made with 20-per cent chemicals at 60 lb./sq. in., using a cooking time schedule of 4 hours. The product proved satisfactory for producing mill wrappers, and in admixture with suitable kraft pulp, for the manufacture of kraft papers. It could also be used in forming cheap grades of board and as a filler in straw board. The author believes that about 1.5 to 1.75 tons of this cheap pulp could be made economically for every ton of bamboo that is chipped.

S. C. Jain. *Indian Pulp and Paper* **14**, No. 4, 213 to 214 (1959) through *Abstr. Bull. Inst. Paper Chem.* **30**, 1074 (1960).

Degree of sizing in paper

Three methods used in determining the degree of sizing were compared critically. These were the ink test, the procedure used by Professor Jayme (Darmstadt) and the electrical sizing test (termed K.B.B.). The third test is discussed at length.

This electrical test makes it possible to differentiate between two phenomena; the penetration of liquids into the paper capillaries and that into the intermicellar regions. The capillary penetration gives an index of the degree to which sized paper shows hydrophobic properties. This is indicated by the slope of the curves obtained by plotting the increase in the electrical current against the square root of the time. These data led to a modification of the K.B.B. size test.

Cristofor Simionescu and Emanuel Poppel *Bul. Inst. Politeb Iasi* (new series) 4 (8) No. 1 to 2, 227 to 236 (1958) (original in Rumanian, with Russian and German summaries); through *Abstr. Bull. Inst. Paper Chem.* **30**, 1068 (1960).

Weight of unit volume of chips

The construction and operation of a piece of equipment shown (externally) in Fig. 1, serves to measure the bulk density of

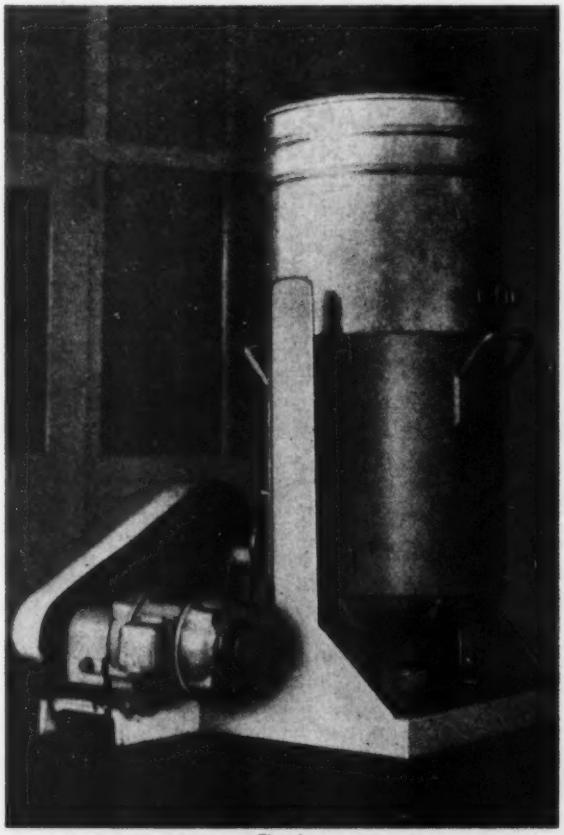

Fig. 1

wood chips in terms of kg. per cubic meter, when chips are packed loosely or tightly in a suitable container. Both spruce and beech chips were examined, and the method used was that given in the German Merkblatt 1/7/56. Some of the results are also compared

with those given by Tappi method T21-sm-58. The effects of chip size on bulk densities were also noted and furthermore, studies were made on the effects of uniformity (or non-uniformity) of chips and on their length and thickness. The results are calculated both on the air-dried and on the oven-dried bases.

E. Stolz. *Wochbl. Papierfabr.* **88**, 203 to 207 (1960) (in German).

Hydrolysis and condensation of lignin

Commercial lignins, prepared by the newer Rheinau method, as well as other types of lignin, were studied to show the effects of treatment with water followed by heating 20 hours at temperatures up to 200° C., and subsequent oxidation with nitrobenzene in alkaline solution (to form vanillin, *et al*). The methoxyl distributions were determined (before and after such treatments), and it was shown that there is a relationship between the vanillin yield and the ability of the treated lignins to condense with phenolic residues. As the heating temperature increased up to 200°, the vanillin dropped and the polymeric phenolic condensation products increased.

It was also found possible to show to what extent the various types of untreated and treated lignins underwent phenolic condensations. Hydrochloric acid lignins previously irradiated (using Co60 as a source), showed only slight differences from the characteristics of the initial lignin. A fiberboard (Nowak) was also studied at various stages of its manufacture; alkaline digestion showed the greatest decrease in the degradation to phenolic aldehydes, whereas the hardening and pressing stages showed only minor effects. After the thermal hydrolytic treatments, Brauns' native lignin and Freudenberg's dehydrogenation polymer obtained from coniferyl aldehyde gave rise to effects that were quite similar to those shown by the protolignin in the original sprucewood.

After the thermal treatments, all of the lignins studied, produced so-called "residual vanillin" in about the same yields. This vanillin apparently found its origin in the heat-stable, water soluble fission products emanating from the guaiacylglycerol-β-ether groups originally present. Products obtained from coniferin were also investigated. The hydrochloric acid lignin polymer (*I*) and the so-called ethanol lignin (*II*), prepared from coniferin, served as model compounds. In contrast to (*I*), (*II*) contained no groups that could be converted into vanillin. However the ethanol lignin prepared from wood itself yielded some vanillin. The coniferyl alcohol groups in coniferin were more sensitive to degradation than was the corresponding aldehyde. Cinnamic alcohol however proved quite stable at pH 3 (and 200°). In summary, the guaiacylglycerol-β-ether groups are the structural components responsible for the secondary condensations and for the technologically important lignin-phenol condensation products. These same groups are involved in ethanolysis, hydrolysis, alkaline fission after sulfonation, fission with sodium in liquid ammonia, and the alkaline nitrobenzene oxidation. Adler (Ind. Eng. Chem. 49, 1377 and 1391) deserves the credit for showing the reactivity of this grouping in effecting the secondary condensations and the lignin-phenol reactions.

Thirty references. K. Kratzl and J. Gratzl. Holzforschung u. Holzverwertung (Austria) **12**, 8 to 14 (1960) (in German).

Chemicals from spent liquors after pulping

Continuous or periodic heating at temperatures of 280 to 350°C. of sulfite or kraft spent liquors pre-treated with limited amounts of sodium sulfide or sodium hydroxide, yielded up to 50 per cent of ether-soluble compounds. These yields are based on the organic matter originally present in the liquors. Primarily, these are lignin degradation products, but some of them may perhaps be traced back to carbohydrate origins. The yields of phenolic compounds soluble in ether approximated 200 kilos/ton of pulp. The mixture showed "Novolac" properties and was quite readily hardened by means of hexamethylenetetramine.

Very similar yields of these ether soluble materials were also obtained when the liquors were heated continuously with sodium hydroxide (alone) at atmospheric pressure, but in such cases, the amount of alkali added exceeded 50 per cent of the total amount of the original organic matter in the liquors. The reaction products included about 3 per cent pyrocatechol and certain of its simple derivatives, such as 4-aceto-pyrocatechol, protocatechuic acid and the corresponding aldehyde. A sample of commercial kraft black liquor contained both vanillin and acetoguaiacone (2 kilos each per ton of pulp). The equipment used in these treatments, its operation, and full data are tabulated, and methods used in separation of the chemicals are described.

14 references and various figures. Terge Enkvist. *Svensk Kemi Tidskrift* **72**, 93 to 106 (1960) (in Swedish with brief English summary).

Smoothness and paper printability

A study was made of the influence of 18 different papermaking and 7 printing variables on proof press printing, and 48 different samples of paper were examined. These included fine papers, photogravure papers and newsprint. Among the papermaking factors, the most important one was smoothness of the sheet, and this could be correlated well with the results obtained in printing. Usually papermaking factors were the more important in the case of newsprint and photogravure papers whereas printing variables were found to be more significant in the case of fine papers. The printing factors had a greater effect on ink transfer and on gloss (reflectivity) than did the papermaking variables.

Yakinori Hata. *J. Japan. Tech. Assoc. Pulp & Paper Ind.* **14**, No. 2 90 to 98 (1960) (original in Japanese, with English summary) through *Abstr. Bull. Inst. Paper Chem.* **30**, 1189 to 1190 (1960).

Pulp strength losses due to chip damage

Spruce pulps were made by an acid bisulfite digestion (calcium base, at pH 1.5), a bisulfite digestion (soda base, pH 4.5). Digestions of the same chips were also made by the sulfate process. In the case of the acid bisulfite digestions, the maximum temperature was 135° C.; for the bisulfite cooks the maximum temperature was 160° C. The cooks were made on *carefully prepared chips* made in the *laboratory*, and on chips prepared by using *commercial chippers*, which caused some damage to the wood. Other digestions were also made on the damaged and the undamaged halves of the technical chips. The commercially prepared chips, that had been damaged but not subdivided, when pulped, either by the acid bisulfite or by the bisulfite methods,

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gave products whose strength properties were considerably lower than were those made from the undamaged laboratory chips (or from the undamaged portions of the technical chips). This was especially true when the damaged halves of the chips were cooked. These differences were shown in the breaking length, burst and tear.

On the other hand the sulfate digestions gave pulps, the properties of which were all very similar, irrespective of whether the chips had been damaged or not. These results are discussed fully. Although the initial acidity used in bisulfite pulping was much lower than that used in the acid bisulfite digestions, the results in pulp strength were rather similar; this is explained by the fact that the maximum temperatures were higher in the bisulfite than in the acid bisulfite cooks, and that thus the overall hydrolytic effects might well be quite similar. Using laboratory chips, a bisulfite pulp with the higher Roe number had the highest breaking length, although the bursting strength was about the same as that of other pulps prepared from similar chips. However its tear factor was much lower than that of the corresponding sulfate pulp, and only slightly better than that of the acid bisulfite pulp. In the case of the technical chips, the bisulfite pulp with a high Roe number, had a breaking length equal to that of the sulfate pulp, but a lower bursting strength and a much lower tear factor. The viscosity of the bisulfite pulp was lower than that of either the acid bisulfite pulp or of the kraft pulp. This viscosity however could be increased by treatment with sodium chlorite, followed by sodium borohydride. Even with this treatment however, the viscosity of the bisulfite pulp remained the lowest of the three types. Any viscosity increases obtained by the chlorite-borohydride method was not affected by chip damage, since practically the same increases were noted with pulps made either from damaged or undamaged chips.

Fifteen references. Nils Hartler and Ove Sundberg, *Svensk Papperstidn.* 63, 263 to 271 (1960) (in English).

Hungarian plants suitable for pulp manufacture

In this study, the following specifications were laid down. For any domestic plant to qualify, it should have the proper chemical, physical and morphological characteristics; its fibers must not be damaged, and their supply should be adequate and their quality uniform. Furthermore the raw material must be easy to handle and cheap, both in its initial cost and in the cost of manufacture. It should also be readily transported. Over fifty fibrous raw materials available in Hungary were examined, using the above criteria. From orienting pulping and papermaking experiments, only four of these met these requirements and showed promise. These were reeds (*Phragmites communis*), sorghum, cornstalks, and willow shoots. Pal Lengyel. *Papiripar* 3, No. 5, 164 to 166 and No. 6, 218 to 223 (1959) (original in Hungarian, with Russian and German summaries) through *Abstr. Bull. Inst. Paper Chem.* 30, 1182 to 1183 (1960).

Problems in glassine production

Glassine is manufactured at the Burnie mills in Australia. Its manufacture involves the use of a stone roll beater for stock preparation and such ancillary equipment as a dampener and supercalender in treating the paper web. Quality control includes the basis weight and the oil-resistance of the sheet and these have helped in improving the product. A transparency meter is also used in routine testing of the finished product, thus securing uniformity and also in furnishing some clues regarding operational difficulties. The authors discuss certain machine problems, involving cockling and creasing, as well as pitch troubles and they also outline the beater refining operation leading to the desired freeness.

J. Briggs and F. Hall. *Appita* 13, No. 4, xvii to xxii (January 1960).

The scanning electron microscope

The principle of this type of electron microscope is examined and its possible uses in pulp and paper research are discussed. The new scanning electron microscope that is now used by the Pulp and Paper Research Institute of Canada is described and some orienting results are given.

K. C. A. Smith. *Pulp Paper Mag. Can.* 60, No. 12 T 366 to 371 (1969) through *Abstr. Bull. Inst. Paper Chem.* 30, 1205 (1960).

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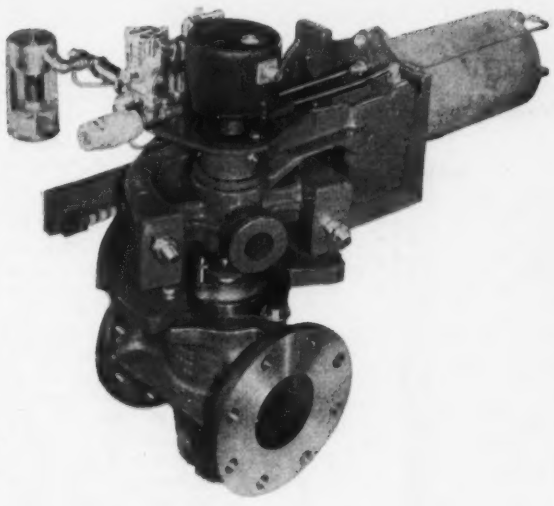

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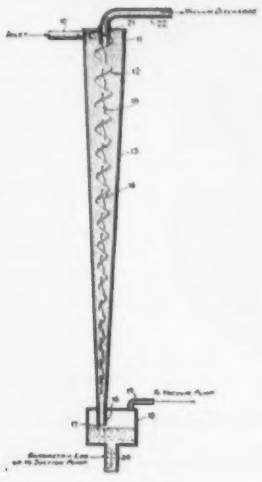

Fig. 1

U. S. 2,920,761, issued Jan. 12, 1960, to Horace Freeman and John D. Boadway and assigned to Nichols Engineering & Research Corp., describes a vortex separator for separating dirt from and deaerating paper pulp suspensions.

As shown in Fig. 1, the suspension is admitted under pressure through inlet 10 tangentially into a cylindrical upper portion of the separating chamber, whereby a helical flow, as an outer downward vortex is established within an elongated slightly tapered conical chamber 13. This helical flow, as indicated, is of gradually diminishing diameter and gradually portions of it are reversed to form an upward inner helical flow as indicated at 14 surrounding a small gas core 15. Down near the lower outlet end 16, the heavier particles such as dirt will have become forced centrifugally outwardly of the vortex and travel along down to the outlet 17 where with a small amount of the stock, they will be discharged into an enclosed chamber 18.

This chamber or enclosure 18 as indicated, is brought into communication by a pipe 19 with a suitable vacuum pump and is so designed that it will normally be partially filled with the discharged dirt-containing suspension. The under side of the chamber 18 is connected by a pipe 20 either to a barometric leg or to a suitable suction pump such as will insure discharge of the rejected stock from the chamber at about the same rate as the discharge of such stock from the conical chamber above.

The small elongated hollow core 15 in the vortexes may, by means of the evacuated chamber 18, be maintained constantly under a low sub-atmospheric pressure, preferably a pressure about equal to the normal vapor pressure of the suspension being treated in chamber portion 13, or for example from 4 to 8 cms. Hg absolute. Hence, dissolved and occluded gases within the vortexes in the conical chamber portion 13 will tend strongly to be liberated from within the liquid nearest the hollow core 15, and such liberated gases as well as vapor present in the hollow core and the gas contained in any bubbles or froth which will be forced into the hollow core will be constantly evacuated downwardly through the hollow core to the enclosure 18 and out to the vacuum pump. Meanwhile, the treated stock embodied in the upward return vortex 14 will pass out through the central outlet 21 at the upper end and may be withdrawn by applying to the outlet connection 22 any suitable evacuating device such as a barometric leg or suction pump.

Production of bamboo pulp and paper

U. S. 2,929,756, issued March 22, 1960 to Charles H. Schuh and assigned to the Government of Burma, describes a process for producing bamboo pulp and paper. Bamboo culms having a moisture content in excess of 40 per cent are shredded to individualize the fiber and cut it into lengths of ⅜ to 1 in. The shredded product is then subjected to a mechanical pulping action in a water suspension of pH in excess of 12. This is followed by sheet formation from the pulp suspension, by dewatering and felting, pressing, and drying to form finished sheets.

Single stage continuous paper making process

U. S. 2,929,448, issued March 22, 1960, to Nicholas Shoumatoff and assigned to West Virginia Pulp & Paper Co., provides an apparatus for achieving the complete manufacture of pulp into a formed and dried paper web at a single pass of less than a complete revolution upon the surface of a continuously rotary drum.

As shown in Fig. 2, the machine consists of a closed housing 12 in which a paper web is formed from pulp, pressed and

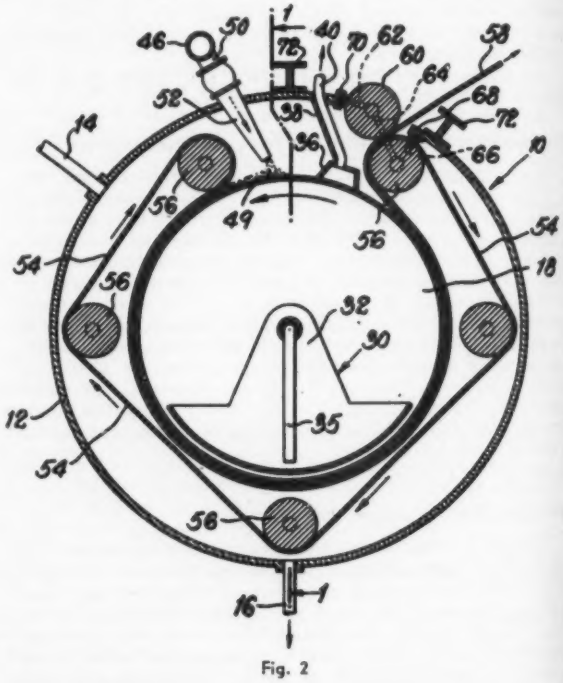

Fig. 2

dried. The housing 12 provides a pressure chamber to which steam is delivered by the conduit 14 and from which condensate is discharged through a conduit 16.

The drum 18 is rotatively mounted in the housing 12. The drum 18 has a wide uninterrupted, perforated, circumferential zone, and may be made to include a steam and water pervious felt cover. Within the drum 18 a trough 30 is provided which includes arms 32 by which it is supported. The trough 30 serves to collect water which is mechanically pressed from the web into the drum, and any water which may be formed by condensation of steam within the drum. A suction pipe (not shown) withdraws water from the trough when water is present, and withdraws steam when no water is present.

A housing member 36 is supported in proximity to the periphery of the drum by a bracket 38. The housing 36 is connected to a suitable source of suction through a conduit 40, and constitutes the principal means for withdrawing steam

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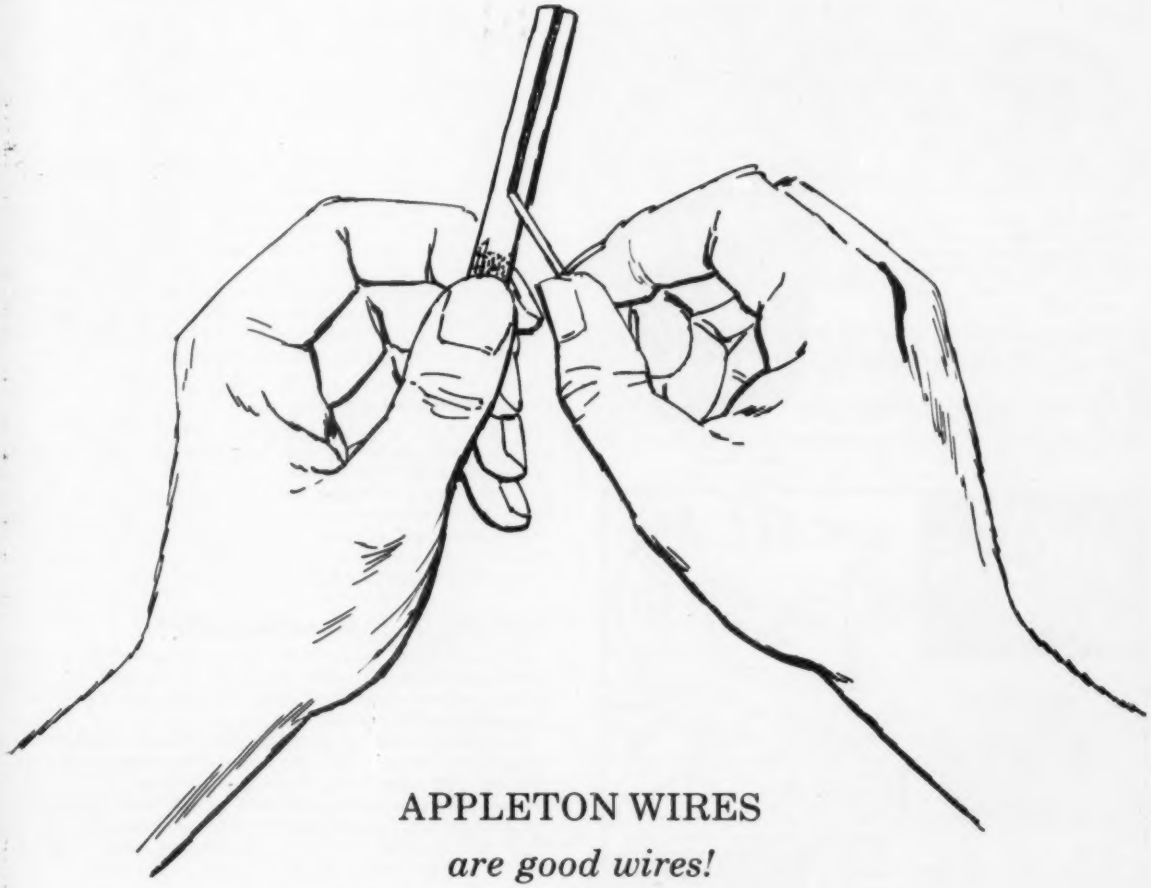

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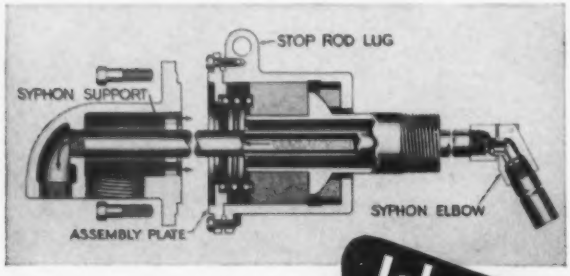
★ Johnson started the whole idea. Today's *complete* line includes sizes from ¼" to 8" . . . self-supported, pipe-supported, or rod-supported . . . for stationary or rotating syphon pipe . . . all operating speeds and pressures . . . for paper machines, calenders, corrugators, waxers, embossers, roofing machines, printing presses.



Type SDP shown. Hinged syphon elbow replaces unwieldy curved syphon pipes with two straight pipes. Newest Johnson development is the Quick Release nipple. Write for Bulletin S-3001.

Johnson Rotary Pressure Joints

First in the Paper Industry

THE JOHNSON CORPORATION
845 Wood St., Three Rivers, Michigan
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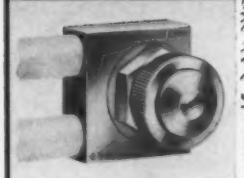
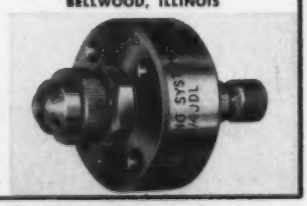
SPRAY NOZZLES ...THAT FIT INSTALLATION NEEDS



LIMITED SPACE? Here's a pneumatic atomizing nozzle no bigger than a half dollar.

NOZZLES INACCESSABLE? Vane of this FullJet nozzle is withdrawn through pipe for easy, remote cleaning.

SIMPLIFIED WALL MOUNTING? Nozzle body acts as flange . . . fits any wall thickness. Perfect for pressurized chambers. →



Spraying Systems gives you better spray nozzle performance . . . plus a wide choice of physical nozzle shapes, sizes and assemblies. Shown here are three such typical nozzles. When the spray nozzle problem also includes installation and maintenance, perhaps we already have an easy solution. For information write for Catalog 24.

SPRAYING SYSTEMS CO.
3254 RANDOLPH STREET
BELLWOOD, ILLINOIS

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Patent Reviews . . .

from the interior of the drum to maintain a vacuum in it.

Wood pulp containing not more than 67 per cent moisture (wet basis) is fed from a reservoir into a manifold conduit 46. Steam discharged under pressure into manifold 46 picks up and entrains the pulp and carries it through nozzles 52 onto the drum 18 at a web forming station. The pulp 49 is carried under a thin, impervious, metallic, pressure band or belt 54 which is more than wide enough to cover the pervious zone of the drum 18. As the pulp encounters the band pressure, it is flattened and evened in thickness. As the web travels initially between the band and the drum, it contains sufficient moisture to admit of squeezing out through pressing. The steam exerts a pressure upon the paper web through the band of a different order of magnitude from that which could be secured by a mere tensioning of the band, causing the paper web to be heavily compressed, and causing a substantial part of the web contained water to be pressed out of the web and sucked into the drum.

As the web continues its advance, there is a gradual and progressive change of operating effect from that of a mechanical press to that of an evaporating drier. This is brought about by the diminishing water content of the web and the continued heating of the web. The formed and dried paper web 58 is conveyed away from the drum 18 through a peripheral exit opening of the housing 12 between the band 54 and a sealing roller 60. Beyond the ends of the roller 60 and the final idler roller 56, the drum is provided with sealing webs 62, 62 and 66 which bear against the ends of said roller.

Paper containing fabric

U. S. 2,929,414, issued March 22, 1960 to Gustav O. Lienhard and assigned to Chicopee Manufacturing Corp., provides a wear-resistant woven fabric consisting of paper yarns and relatively tough and dense saran filaments intersecting one another. The paper yarns are bulkier than the saran filaments. The filaments are crimped to a greater extent than the yarns. The saran filaments form wear-resistant high spots on the side of the fabric where they pass over the paper yarns.

Processing of spent cooking liquor

U. S. 2,928,868, issued March 15, 1960 to Donald H. Grangaard and assigned to Kimberly-Clark Corp., provides a high yield process for converting ligneous wastes into organic acids by a process of partial oxidation.

For example, 200 cc. of sulfite waste liquor having a solids content of 10.9 per cent, which had been diluted to 400 cc. volume with water, and then made alkaline with 60 g. of sodium hydroxide, was reacted with oxygen in a reactor at 950 psi and 210° C. for 24 minutes. The total yield of acids was 16.56 g. The acids produced include acetic, formic, fumaric, succinic and pyromellitic acids.

Manufacture of primer coated fiber board

U. S. 2,928,129, issued March 15, 1960 to George E. Chamberlin and Russell G. Knutson and assigned to Minnesota & Ontario Paper Co., describes a process for the manufacture of primer coated fiber board.

A ligno-cellulose mat containing a fusible resin such as extracted pine wood pitch is hot pressed at 400 to 475° F. The temperature of the hot pressed board is then reduced to 300° F., and a pigmented prime material containing fusible resin is applied to the hot board. The priming material is dried by the internal heat of the board for less than 3 minutes, and then the board is water-cooled. The consolidated product is highly resistant to water and moisture.

Paper machine drive

U. S. 2,927,481, issued March 8, 1960 to Edward D. Beachler and assigned to Beloit Iron Works, provides a drive mechanism for paper making machines, and more particularly a means

for starting and operating individual sections of a lineshaft driven paper making machine.

The present invention provides a differential gear train in combination with a water cooled brake, in preference to the usual main friction clutch. A second power train is provided in combination with the water cooled brake for the purpose of introducing a variable speed increment above or below the base speed of the unit.

Cleaning of paper pulp suspensions

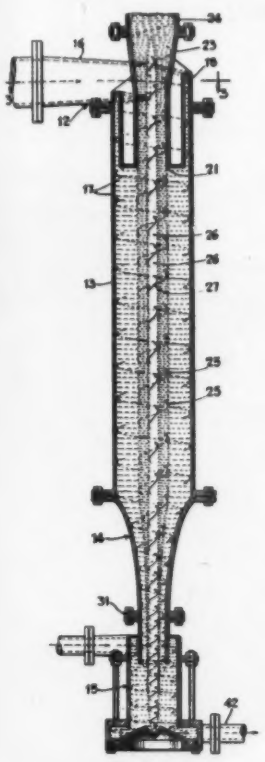


Fig. 3

U. S. 2,927,693, issued March 8, 1960, to Horace Freeman and John D. Boadway and assigned to Nichols Engineering & Research Corp., describes apparatus for the separation of undesired particles from paper pulp stock by means of high velocity vortices. The object is to provide a high cleaning ratio (5 to 10) but with only a very small percentage rejection of the desired pulp particles from the suspension (1 to 4 per cent).

As shown in Fig. 3, the apparatus involves an elongated chamber of circular cross section into one end of which a suspension to be treated is introduced under pressure through a restricted tangential inlet such that a substantial part of the pressure energy will be converted to velocity energy, causing a high-velocity vortex to be maintained and to extend from the inlet end of the chamber to the other end, and then back as an inner votex to an accepted stock outlet, the vortices being of such velocity as to maintain an axial gas core. The end of the chamber opposite from the inlet is provided with a cone which is inwardly curved, the apex of which cone discharges into an enclosure so shaped that the portions of the vortices which extend through such apex, as well as the gas core therein, will be retained in a stabilized centered position, while the separated particles containing a small amount of liquid stock pass through an annular slot and are then withdrawn tangentially and so as not to disturb the stabilized conditions.

Other Patents of Interest to the Pulp and Paper Industry

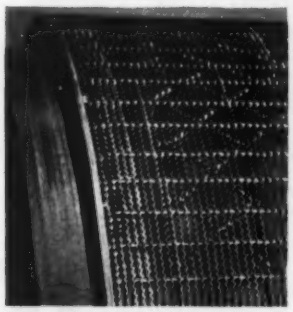
Subject	Inventor or Assignee	Patent No.	Date
Die for pulp molding	Diamond National Corp.	2,927,635	3/8/60
Packaging and display carton	Westinghouse Electric Corp.	2,927,687	"
Carton and container carton assembly	KVP Sutherland Paper Co.	2,927,713	"
Dispensing carton	Kimberly-Clark Corp.	2,927,714	"
Portable insulated container	Robert K. Adams	2,927,720	"
Display carton	Gaylord Products, Inc.	2,927,721	"
Rotary stock thickener and refiner	Edmund P. Arpin, Jr.	2,927,738	"
Papermaking drier	Everett G. Drew	2,928,185	3/15/60
Adjustable slice for flow box	Albert E. Reed & Co.	2,928,464	"
Carton	Lengsfield Brothers, Inc.	2,928,541	"
Reclosable containers	Paul J. Graybill	2,928,579 & 2,928,581	"
Collapsible carton	Federal Paper Board Co., Inc.	2,928,580	"
Tamper-proof carton	The Lord Baltimore Press, Inc.	2,928,582	"
Production of high wet strength paper	Eastman Kodak Co.	2,928,736	"

Sinclair's Research PAYS OFF again!

ZIGZAG*

winding wire

Means Better Dandy Roll Performance



New ZIGZAG* wire gives you better dandy roll performance because of increased drainage through cover of dandy roll and reduced water throw. It eliminates the need for double covers and spiral or diagonal seams, thus assuring a tighter fitting straight seam cover. New ZIGZAG* wire improves paper quality by decreasing filling and sheet streaking.

For complete information on the ZIGZAG* wire, write or call:

*PATENT APPLIED FOR

THE SINCLAIR COMPANY
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HOLYOKE, MASSACHUSETTS

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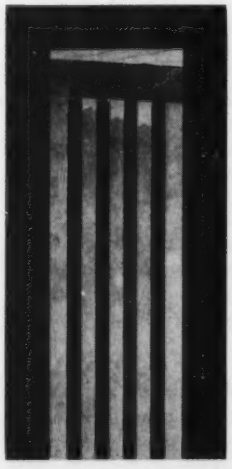
END OF GRAIN MAPLE

SLOTTED SUCTION BOX COVER

Time-proved in mills everywhere for extending wire life and providing an even vacuum. The smooth, long-wearing wax-like surface eliminates streaks, reduces pin holes, improves tensile strength and fiber formation.

Tough, laminated plastic cross members support the end-of-grain maple lands and completely eliminate sag.



Made by the manufacturer of Res-Lin and Met-al-Rib Suction Box Covers

WIRE LO-VAC SAVER

U.S. Patents No. 2,618,206 and 2,740,332
Can. Pat. No. 477,588

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APPLETON WOOD PRODUCTS CO.
Appleton, Wisconsin

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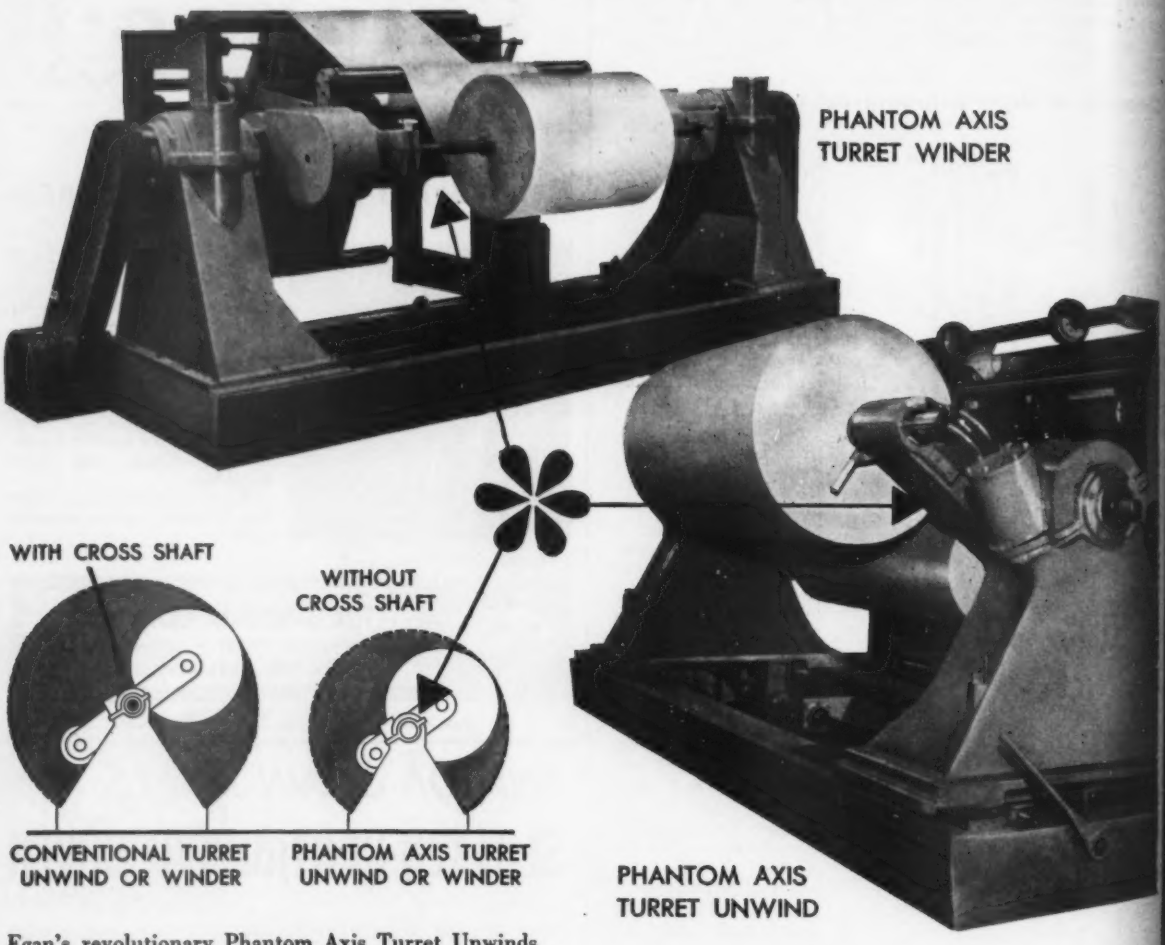
IT'S WHAT'S NOT THERE THAT COUNTS*



Egan's revolutionary Phantom Axis Turret Unwinds and Winders *eliminate* the center cross shaft for greater roll diameters and more compact overall design. In addition, these units require less overhead and floor space for installation (see drawing).

The more compact design also assures greater rigidity and better operation at high speeds. Phantom Axis Unwinds and Winders are engineered to permit speeds in excess of 1000 fpm; are available in web widths through 120", and include power rotation of the turret and knife cut-off as standard features. Air chucking of cores or shafts is available at the customer's option.

ADDITIONAL FEATURES

PHANTOM AXIS UNWIND: Automatic or manual side shifting; provision for splicing with either inside or outside of web up (optional); flying splices at full machine speed; pneumatic constant tension system (optional).

PHANTOM AXIS WINDER: Side shifting available (automatic or manual); constant or tapered tension; smooth transfers at full machine speed with unique single motor design.

Egan

CABLE ADDRESS: EGANCO—SOMERVILLE [illegible]

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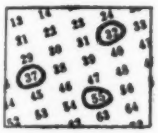

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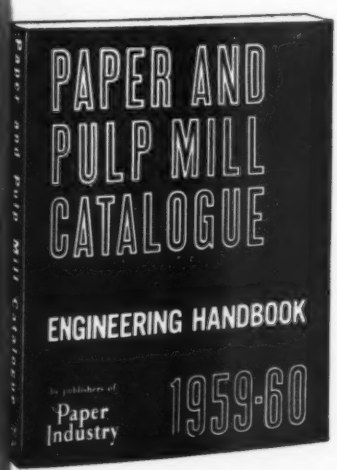

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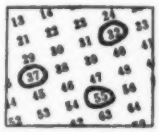

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NEW PRODUCTS

These items are numbered for your convenience. Further information on the various products described may be requested at no obligation through our Readers' Service Dept. Use the business reply card in this issue.

Variable speed drive

The RS-33 P.I.V., a new constant-hp. variable speed drive, is designed to meet capacities up to 50 hp. and ratios up to 5.5:1. These drives are said to give simple, quick and precise speed control and meet infinite speed-varying requirements, offering positive power transmission through their entire speed range. Drives of 3.8:1 and less can be directly coupled to a 1750 rpm. motor.

They are available in five types: basic drive, basic drive with output gears, basic drive with input and output gears, basic drive with integral foot-type motor and basic drive with integral foot-type motor and output gears. *Link-Belt Co.*

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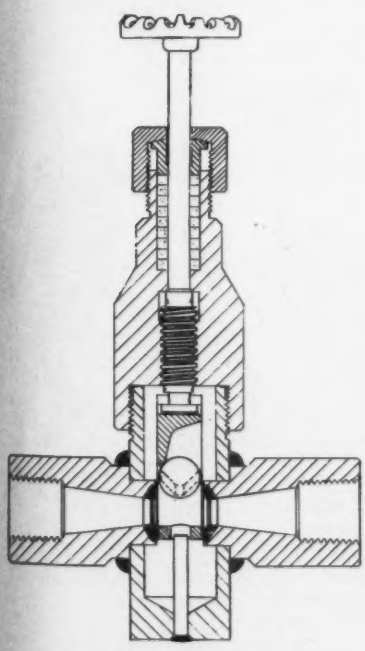

Convertible bonnet valve

A new valve is now available that can be easily converted from a manual to a control or a motor-operated on-off valve. The conversion is made by simply replacing the bonnet and stem of the manual valve with a new bonnet and stem and a yoke carrying the required topworks.

The P-K Paul barstock valve is obtainable in ¼-, ⅜-, ½-, and ¾-in. sizes with pressure ratings of 1500 lbs. and 2500 lbs. Standard construction for the manual valve is with an inside screw. Automatically operated valves are supplied with the interchangeable outside screw and yoke construction. *General Kinetics Corp.*

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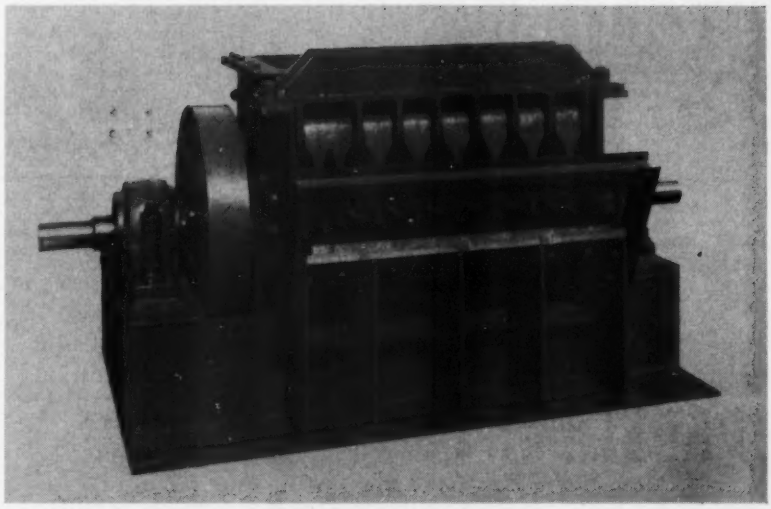

Bark grinding hog

A new K. C. model of the Montgomery Blo-hog, although designed for grinding bark, has been found in practice to be useful in many other fields. Railroads, for example, use these blo-hogs for the grinding of all kinds of dunnage out of box cars as well as car siding with nails, car decking with bolts, etc. The dunnage includes such items as steel strapping, nails, wire, concrete, brick, rubber hose, paper, rags, etc.

Improvements of this new model over the old are as follows: the outside dia. of the rotating rings has been increased so they will at all times be operating between the anvils; a screen consists of baffles only, which lets the bark out of the screen under the rotor just as soon as it is small enough for use; cutting teeth have been enlarged and strengthened (now all teeth are identical); the anvils are provided with replaceable anvil points which are quickly changeable without moving the swinging anvils. These improvements are only a partial listing of the many changes made in this bark grinding hog which is finding such widespread use in industry. *Jacksonville Blow Pipe Co.*

Circle No. 3 on Readers' Service Card

Tramp metal detector

The largest metal detector ever built for industry (aperture 60 by 48 in.), is said to be of such high sensitivity that, even with the conveyor filled, a 2-in. nail will trip the detector and shut down the conveyor instantly. While metal belt lacing cannot be permitted, large metal objects moving around the search head, or even men working with picaroons handling the logs on the belt, do not trip the detector if reasonable care is taken. *Meltronics Inc.*

Circle No. 4 on Readers' Service Card

Air shaft

A new air operated reel bar for mounting rolls of paper, textiles, foil and wire on winding, unwinding or rewinding equipment, now available, presents a smooth surface for easy insertion in rolls when it

is deflated. For coreless narrow-core, operation, the Nim-Cor air shaft is available with an expanded elastomeric sleeve. When air is applied to the shaft, the sleeve is expanded by internal, multiple rows of metal buttons to form a collapsible winding surface.

All units are custom made to user's specifications in diameters of ¾ to 12 in. and in lengths of 3 to 25 in. *Nashua Industrial Machine Corp.*

Circle No. 5 on Readers' Service Card

Brightness meter

The MEL model 1251 is a brightness meter designed for factory use in the measurement of brightness of samples of pulp and paper. Suitable for both buyer and manufacturer, it is said to provide accurate, standardized and accurate measurements. The high speed of measurement and high order of stability makes it ideally suited for plants where a great many readings must be taken.

Designed for 24 hr. or shorter period operation, it measures brightness of a large area (one in. dia.), increasing the statistical reliability of the readings. It incorporates an integrating sphere and is reported to feature long term accuracy and stability. It can be correlated with any master instruments through the calibration procedure as specified in TAPPI T452m-48 and TAPPI T217m-48. *Meltronics Inc.*

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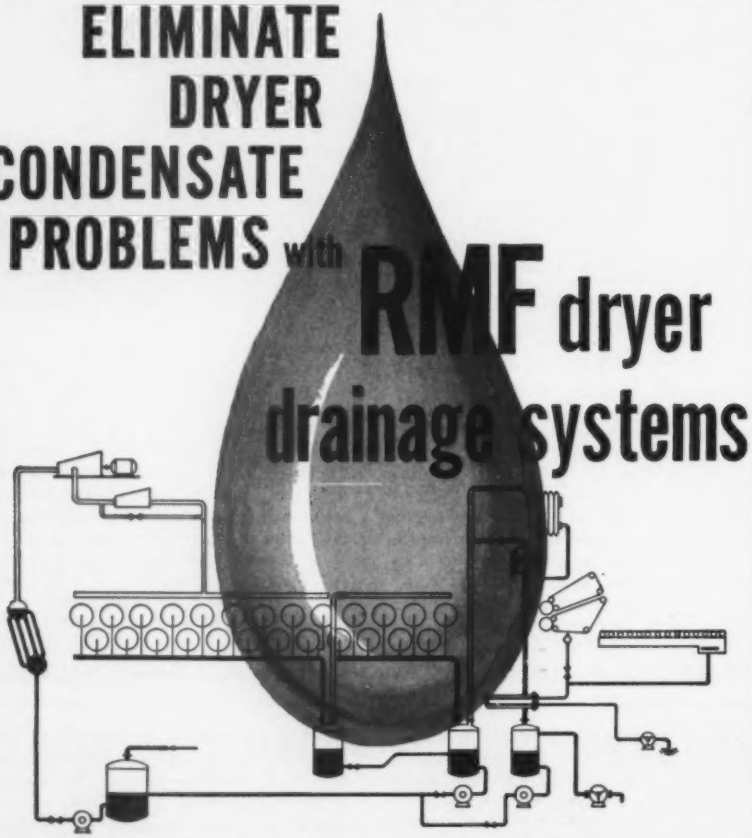
ELIMINATE DRYER CONDENSATE PROBLEMS with RMF dryer drainage systems



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Our Dryer Drainage Systems will effectively eliminate your water condensate problems. Drying capacity is substantially increased and you get more effective drying at lower temperatures. In addition, RMF Systems result in more uniform drying across the sheet, assuring automatically graduated dryer temperatures. This lessens shrinkage, cracking, curling, wet streaks and hardening.

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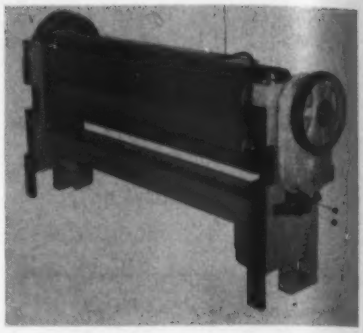
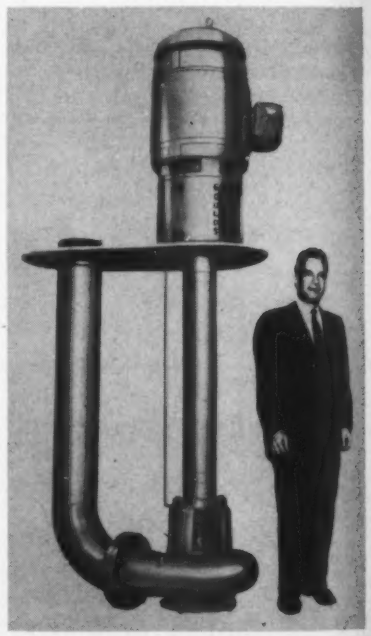


Embosser

A new embosser with matched steel rolls features air-loaded steel rolls with precision adjustable nip control, allowing for positive adjustment. In the event that rolls are separated, they can be brought back to their original operating position accurately.

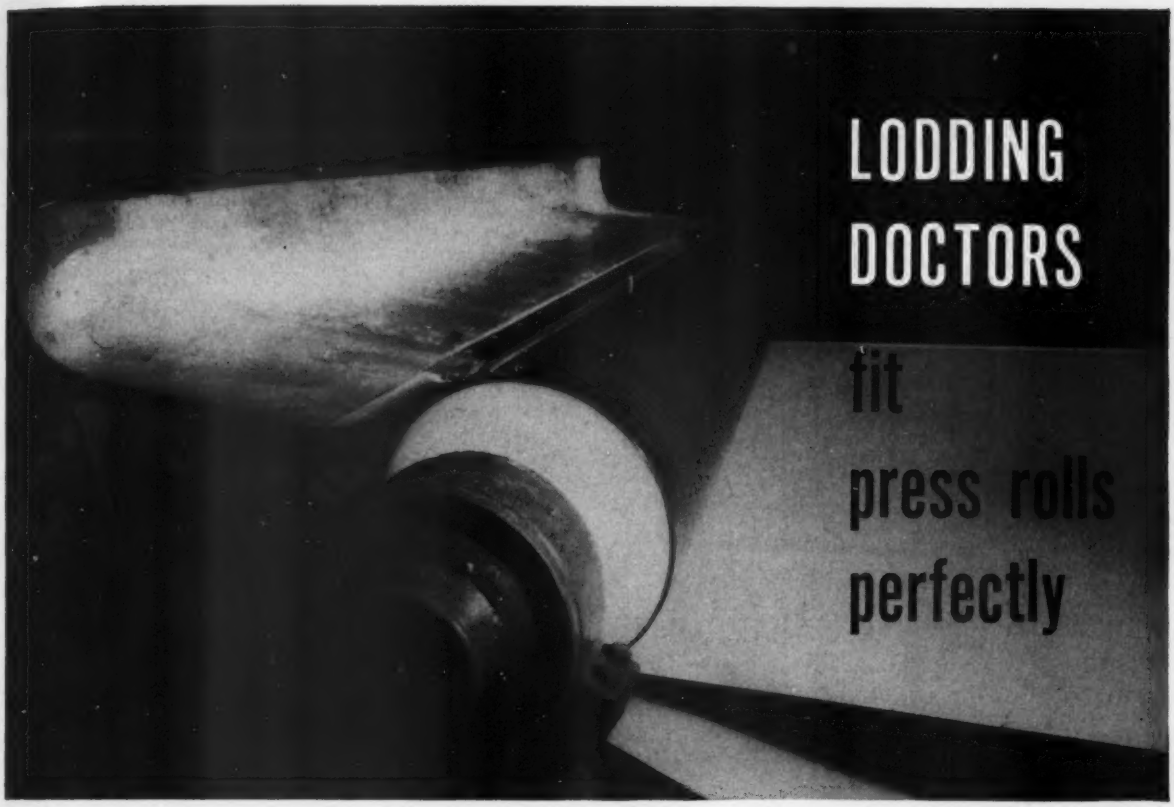
Available as a separate installation or as an attachment to rewinders, folders or printing presses, this new embosser has fully enclosed, oil lubricated herringbone gears and precision spherical roller bearings with tapered inner race arranged for hydraulic removal. *Paper Converting Machine Co.*

Circle No. 7 on Readers' Service Card



Centrifugal sump & process pumps

Two new sizes have been added to the line of this company's heavy duty vertical centrifugal sump and process pumps. This increases the capacity range from approximately 1000 to over 3000 gal./min. The new sizes, 6- and 8-in. discharge units, are available for pit depths of 3 to 20 ft. for either dry pit or wet pit service, and can be furnished in all iron, bronze fitted or stainless steel construction.



LODDING PRESS DOCTORS are recognized by their ability to remove all water from the roll. Even when running a pond, there is no leakage.

Outstanding performance like this is due to Lodding's specialization in precision doctoring. Every doctor is individually designed for each installation.

Top press roll doctors are no exception. They are engineered to fit accurately and to provide uniform pressure along the entire length of the doctor blade, regardless of the amount or location of broke on the scoop. The scoop itself is fused into the rugged machined surface of the doctor back for added strength. In addition, perfect alignment with the roll axis is assured by mounting the doctor on the press arms, enabling it to ride with the roll, no matter what position the roll takes.

Details like these guarantee the unique dependability of Lodding custom-made doctors in thousands of world-wide applications. Whatever your need for doctors, from Fourdrinier to reel, you can rely on Lodding, the recognized world leader in precision doctoring.

Write, wire or phone Lodding or your nearest sales representative for complete technical information.

LODDING
Engineering Corporation
AUBURN, MASSACHUSETTS

For more data circle 145 on Post Card

The open impeller used on all units has ejector vanes on the back side which effectively prevent entrance and jamming of solid materials between the back of the impeller and the stationary side plate. Six-in. pumps reportedly handle solids up to a dia. of 1-11/32 in.; 8-in. pumps up to 2-27/32 in. *Goulds Pumps Inc.*

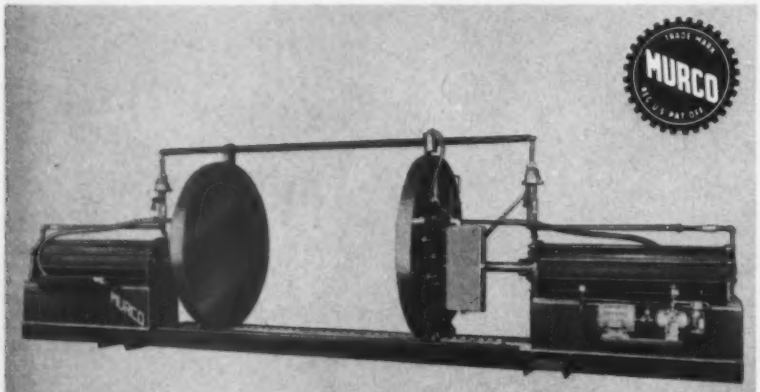
Circle No. 8 on Readers' Service Card

Lift table

Extending the line's range from a low of 500 lb. to a high of 24,000 lb., this new heavy-duty tandem unit, the model LT-12 lift table, employs the same basic hydraulic-powered, scissor-type lifting mechanism as the other lift tables in this line. However, this model has the additional advantage of a collapsed height (only 8½ in.); its extended height is 40 in. and it is available with platforms in various sizes as well as with tops suitable for turntables, conveyor units, fixtures or other custom-built working devices.

Ease of installation is a particular feature of this tandem table, with its self-contained motor and pump assembly. It can be simply positioned by the machine it is to serve and merely plugged in. *Southworth Machine Co.*

Circle No. 9 on Readers' Service Card



If YOU SHIP PAPER IN ROLLS.....

MURCO Roll Heading Machines

Here is a machine that will operate efficiently and continuously day-in-and-day-out without any attention that is so common with roll heading machines of lighter construction. The pioneer Roll Heading Machine in the industry, MURCO Roll Heading Machines are made in various sizes — 24" to 72" diameter and lengths varying up to 200". Installations in mills throughout the country.

If you ship paper in rolls, just tell us the size of your rolls and your present method of heading rolls . . . we will submit a proposal to meet your requirements . . . without obligation.

- **WILL CUT FINISHING ROOM COSTS**
- **PRODUCE NEATER ROLLS**
- **IMPROVE ROLL APPEARANCE**

- **Valve may be operated from any position**
- **Rollers of solid aluminum or wood**
- **Heavy frame construction that requires no maintenance**

D. J. MURRAY MANUFACTURING CO.
MANUFACTURERS SINCE 1883 • WAUSAU, WISCONSIN

For more data circle 146 on Post Card

Moveable wall systems

Flexible and moveable wall systems are now available which are said to remove many distractions with a consequent improvement in efficiency and morale for those people using such facilities. Offices for a typical installation gave privacy to engineers of one firm in addition to the inclusion of a conference room which provided an appropriate place for lengthy meetings or discussions. *GR Products Inc.*

Circle No. 10 on Readers' Service Card

Midget transmissions

These new midget transmissions are said to be capable of converting any constant speed input power into an infinitely adjustable output speed. One can preset and select one or more adjustable speed, depending on the choice of integral control devices, in one or more directions up to 1650 rpm. These units also have a gear pump for supercharge, control and auxiliary service, a cooling fan, a fluid reservoir case and over-load relief valves. All working parts are pressure or flood lubricated and totally enclosed for long-life protection.

Designed for applications of one hp. or less, the units consume power only in proportion to work performed. There are no restricted flow or directional control valves used. *Oilgear Co.*

Circle No. 11 on Readers' Service Card

Reinforced plastic pipe

A standard line of Duracor reinforced plastic corrosive waste pipe is now available. Fabricated in 10-ft. lengths, the pipe features bell-and-spigot construction joined on the job site with identical resins and random fiber-glass mat to provide positive sealing.

These Duracor systems offer substantial savings over conventional pipe or tile. Each light-weight unit can be lifted and set in place by just two men without the assistance of lift trucks, cranes or other mechanical equipment. This means faster, easier installation at a lower cost. Depending on surface traffic, the new Duracor pipe can be completely encased in concrete, set in a concrete cradle and backfilled with sand, or laid on sand and backfilled with sand. *Ceilcote Co.*

Circle No. 12 on Readers' Service Card

Sizing tester

An automatic KBB sizing tester, developed as an improved apparatus for simple, accurate measurements of the resistance of paper to waters, is a widely used principle for sizing determination. It employs a galvanic circuit formed by a zinc plate, the specimen and a sintered bronze electrode.

When a paper specimen is placed between the zinc and bronze electrodes, it acts as a resistance which decreases gradually as water is exuded from the porous bronze electrode and penetrates the sample.

Special features include negligible personal error, dual weight used to overcome cockle or sample waviness, no outside electric supply required, strong construction, no moving parts, and self-containment. *TMI Testing Machines Inc.*

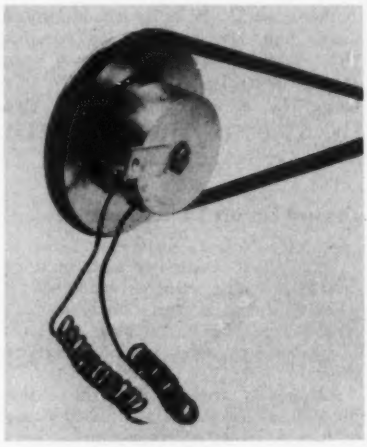
Circle No. 13 on Readers' Service Card

Beading-kit

A new do-it-yourself beading kit includes all of the equipment needed to score out and cut pyrex piping and lifetime drainlines to specified lengths, and to bead section ends for making permanent compression joints. Its use requires a minimum of instruction.

Field fabrication permits the contractor or plumber to make non-standard lengths of piping. A single cutting device and one burner can be used on all sizes of piping. The piping is scored internally and flames are applied to the outside to achieve a clean break. The heat source is a combination of oxygen and "bottled" or natural gas. Equipment is supplied in an easily carried steel case. The kit is available for purchase or rental. *Corning Glass Works*

Circle No. 14 on Readers' Service Card



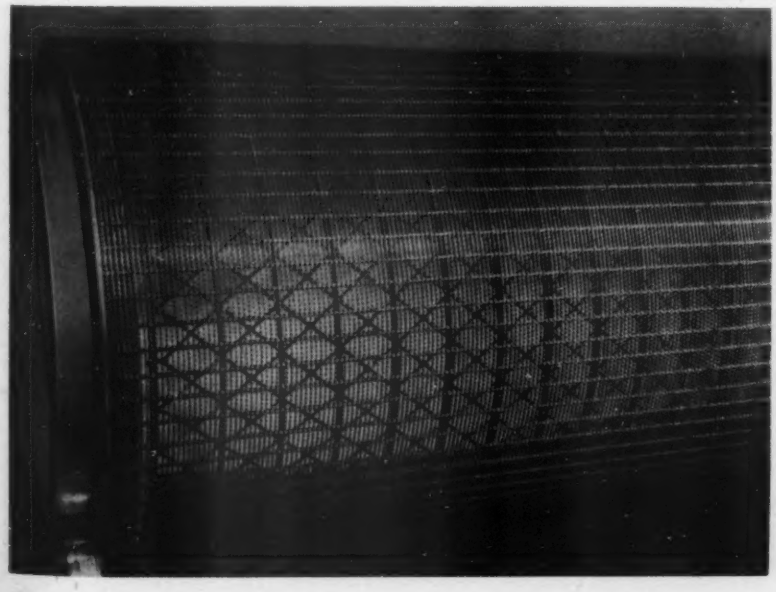
Miniature positive clutch

A miniature positive clutch, CT 14, has recently been developed. It is designed for instrument applications where a minimum space is available for the clutch. Positive acting crown teeth, magnetically engaged and spring released, are pitched for easy engagement at very low rpm; then, smooth

Zigzag winding wire

A new type of winding wire that increases dandy roll efficiency and paper quality, trade named Zigzag because of its shape, is said to increase draining through wire cloth cover of the roll and reduce water throw. Eliminating a double cover and a spiral or diagonal seam on the dandy roll to permit a tighter fitting straight seam cover, this new winding wire reportedly decreases filling and sheet streaking during high speed operation. *Sinclair Co.*

Circle No. 15 on Readers' Service Card



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Motors (AC) to 2500 HP
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M-G Sets to 500 KW
Motors (DC) to 1000 HP
Circuit Breakers to 3000 AMPS.
Turbine Gen. to 2500 KW
Water Pumps to 2000 GPM
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For more data circle 147 on Post Card

FLIPPING the LINT OFF "FLIP-TOPS"

Jenkins' METLKOR Web Cleaning Brush of DuPont Tynex Nylon

The gravure production plant of the Downingtown Paper Box Company, Downingtown, Pennsylvania is an engineering triumph. Here, Marlboro "flip-tops" are produced on Champlain presses at speeds up to 2400 cartons per minute.

HERE'S WHAT THE DOWNINGTOWN PAPER BOX COMPANY SAYS: Mr. George J. Wolfer, Gravure Supt. says: "Jenkins' METLKOR brushes are contributing to the overall economy and quality that is so important to our production. When we reorder brushes, they will be Jenkins' METLKORS."

HERE'S WHAT THE MANUFACTURERS OF THE CHAMPLAIN INLINE GRAVURE EQUIPMENT, OF HARRISON AVENUE, ROSELAND, N.J., SAY: "The Jenkins' METLKOR brushes used in the web cleaning process of our Champlain inline gravure equipment are superior in performance and efficiency and are providing satisfactory and economical operation for our customers all over the world."

JENKINS' BRUSHES FOR PRINTERS

Dampener Roll Cleaning • Cylinder, hold down • Web Cleaning • Dusting • Removal of anti-offset powder • Feed. PAPER MILL BRUSHES: Conveyor Cleaning • Blanket Washer • Fourdrinier Wire Cleaning • Polishing • Coating • Dusting • Dampening • Spray • Sieve • Feed or Carrier • Static Elimination • Flocking • Felt Cleaning • Paint Brushes • Floor Sweeps • Void Detector

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the original . . . the best *Metal Core* brush

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CYLINDER BRUSHES
and **LIFEWOOD®** WOOD BACKED BRUSHES

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Serving Industry for 80 Years
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For more data circle 148 on Post Card

New Products . . .

acceleration drives the load.

The clutch has a 1½-in. dia.; its overall length is ¾ in. It develops 80 oz. in. torque and may be wound for 28 volts dc. A sheave, said to be easily mounted on the driven hub, also serves as an armature. Other available mountings are with worm and spur gears. *Stearns Electric Corp.*

Circle No. 16 on Readers' Service Card

Closed circuit TV camera

A self-contained, single-unit transistorized camera is designed to function at top efficiency under extreme conditions of vibration and noise. This closed circuit TV camera, type TE-9-A, has wide application in the military, industrial and educational fields.

Enclosed in a rugged, dust-tight housing, the Vidicon unit successfully passed a series of tests in which it was mounted close to several rocket engines.

In all cases, the camera performed continuously with consistent picture quality and withstood the shock and noise without any additional special protective housing. In one test, it was mounted 8 ft. from the engine in an ambient noise environment in excess of 190 db. Cylindrical in design, the TE-9-A is 11-¾ in. long, has a dia. of 5½ in. and weighs only 9 lb. *General Electric Co.*

Circle No. 17 on Readers' Service Card

Urea-formaldehyde resin

WETstrez P-685 is reported to be a solution to the current shortage of rosin in the paper industry. Said to improve the water-resistance and ink penetration of hard-sized paper, it enables paper mills to reduce the amount of rosin used by 40 to 50 per cent.

A modified acid-curing urea-formaldehyde resin for waterproofing starch-clay coating colors and adhesives, WETstrez P-685, reports the company, is the solution for the paper industry's problem of weak water resistance when starch coatings are applied at the size press. Corrugated container pastes are also rendered waterproof by the use of this product, which costs, on the average, about one-dollar per ton. *Reichhold Chemicals Inc.*

Circle No. 18 on Readers' Service Card

Log grapple

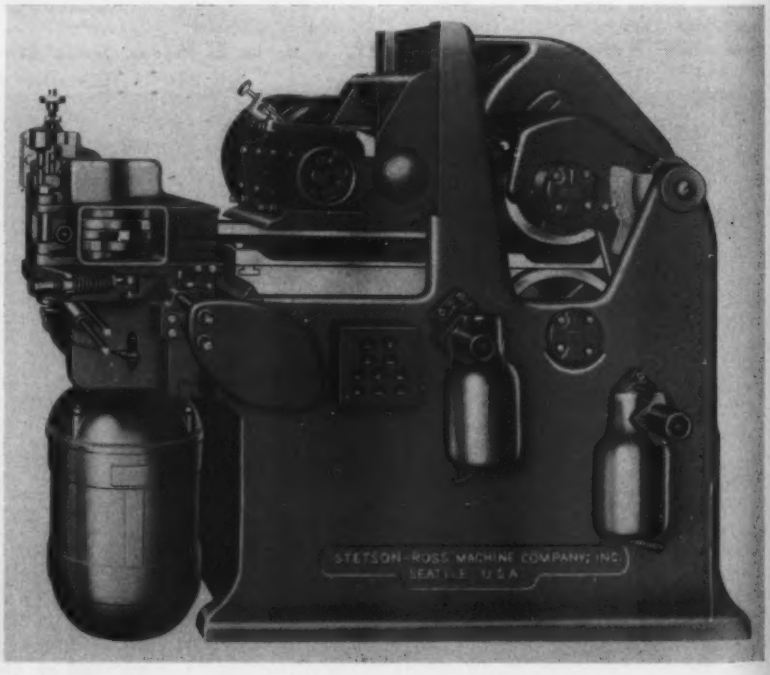
A new type of log grapple that is electrically actuated is now available for use

Double headed chip blanker

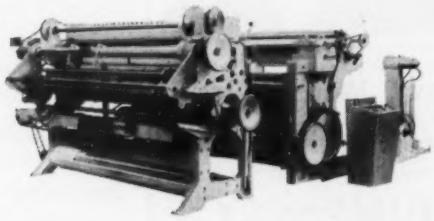
A new top and side chip blanker, now available, is said to produce revenue earning and high quality chips preferred by pulp and paper manufacturers, which eases production flow through the planer and matcher. Details and machine placement are shown in the illustration.

Reported to work equally well on fir, hemlock, spruce or pine, the chip blanker is adaptable to all makes of planers and matchers. *Stetson-Ross Machine Co. Inc.*

Circle No. 19 on Readers' Service Card



Creative engineering and development of converting machinery

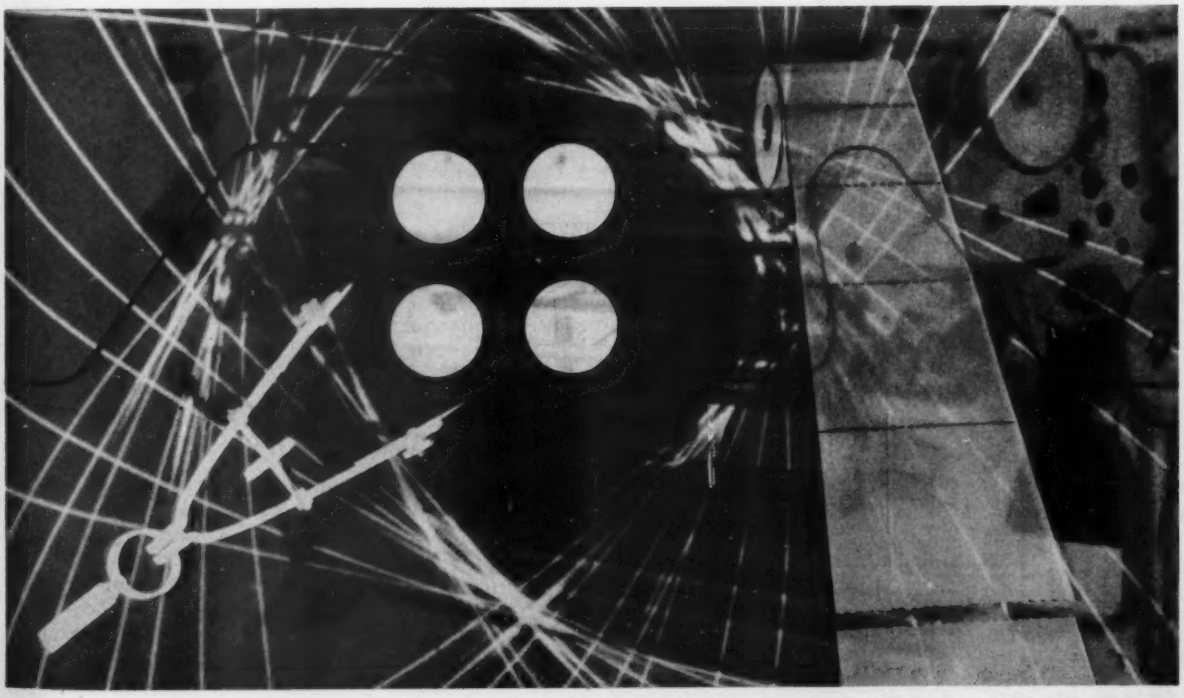


New Rewinder — over 1,000 feet per minute, completely automatic! This new Model 2481 90" Rewinder operates continuously at speeds over 1000 feet per minute, automatically transferring the web for each set of rolls while running at full speed. One operator easily operates two of these rewinders because the mandrels remain in the machine and the automatic core loader eliminates manual labor. It has Paper Converting's new Shear-Cut Perforator, micrometer adjustment for accurate control of nip pressure on embosser, 60" diameter jumbo rolls with automatic constant tension dancer roll control. The ideas in this rewinder typify the *creative* engineering in all our converting machinery. Ideas that mean profit on your production line.

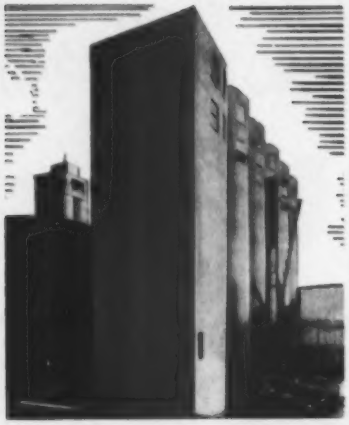
PCMC

PAPER CONVERTING MACHINE COMPANY · GREEN BAY, WISCONSIN

Folders, Rewinders, Embossers, Napkin and Core Machines, Letterpress and Flexographic Presses, Special Converting Machinery



For more data circle 149 on Post Card



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Employee's Manlift

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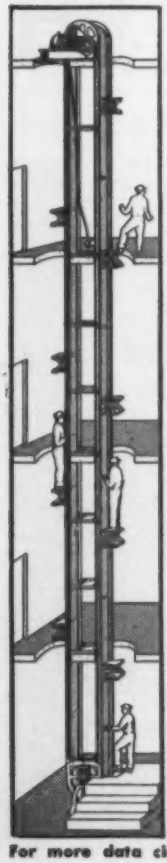
Eliminate stair climbing — save time — reduce employee fatigue. The endless belt provides continuous up and down transportation to and from sampling and operating floors. Easy and safe to operate with ready-at-hand stop and go controls and the exclusive Humphrey Safety Features.



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Humphrey is the original Manlift Elevator, made continuously since 1887.

For more data circle 150 on Post Card

New Products . . .

on LeTourneau Electric powered log loaders with either a heel or straight type boom, and on single-line fixed crane installations where 220/440 v. power is available.

Features of this model include a small, compact electric motor and gear box, mounted on the grapple, which actuates the cable mechanism that opens and closes the arms. Power for the grapple motor is supplied from either the main power plant of the loader, or from standard commercial power in the case of fixed crane installations. An automatic reel mounted on the boom pays out and takes up the rubber covered electric cable that carries power to the grapple motor. *R. G. LeTourneau Inc.*

Circle No. 20 on Readers' Service Card

High pressure pump

A new stainless steel, high pressure pump which incorporates new techniques of using stainless steel in pumps is now available. Two sizes cover a capacity range from 1 to 30 gpm, pressures to 400 psi and temperatures to 180° F. or higher with special seal materials. The pump is quickly disassembled for cleaning.

Some of the other features include true involute, double helical gears that run in contact with each other, give high efficiency, and eliminate trapping or pulsing; solid Teflon lubricant inserts in the pump gears that prevent rubbing against the end covers and keep slip to a minimum; quick change quad ring seals; and a sealed-off relief valve that uses bell washers for more accurate pressure control instead of springs. The pump can be flange or foot mounted and direct coupled or belt driven. *Sonic Engineering Corp.*

Circle No. 21 on Readers' Service Card

Remazol dyes

The following dyes have been added to the series of vinyl sulfon reactive dyes: Remazol yellow GGL, yellow GR, brilliant red BB, brilliant blue B, golden yellow Y brilliant orange RR, brilliant violet 5R.

The line is now comprised of 15 products, all of which have excellent fastness to washing and show many exclusive features, due to the Remazol linkage with cellulosic fibers. *Carbic-Hoechst Corp.*

Circle No. 22 on Readers' Service Card

Finch-Pruyn

(Continued from page 254)

No. 1 and No. 2 machines were provided with 20-in. dia. 2-in. thick rubber covered lumpbreaker rolls. The lumpbreaker rolls are mounted on anti-friction bearings and are equipped with wetting showers, pneumatic quick-lift arrangement and spring that provides for manual adjustment of nip pressure from a maximum of 32 lb. to 9 ½ lb. per linear inch.

Finishing and converting area

The layout is designed to handle the output of different grades of paper produced by the three paper machines. A large part of the new equipment was designed by Finch-Pruyn engineers. This is especially true of the sheet handling system which permits handling paper through the trimmers from skid to skid without lifting a single sheet.

The finishing and converting area houses two rotary cutters: one of which is a new 112-in. Model 1956 equipped with an automatic sheet counter and two 10-roll moveable backstands. The other rotary cutter has been modernized by equipping it with a dc drive and a new collapsible backstand.

The cut sheets of paper drop onto automatically leveled wooden skids which are then delivered to the converting line by fork lift trucks.

The equipment for trimming paper on skids is laid out in horseshoe shape to minimize handling and motion. Levelators, air film tables and Finch-Pruyn patented skid piling equipment and used to complete this operation quickly and accurately. Sheets are cut on a hydraulic 65-in. press trimmer and a Model "A" 25-in. Brackett trimmer to smaller sizes including 8 ½ by 11 and 8 ½ by 14 sizes. These are then carried by belt and roller conveyors to ream sealing, carton packing and carton sealing operations.

A high speed heavy duty multiple-head drill is used to accurately drill round or slot holes in pad or tablet paper. It is equipped with a 2 hp motor, positive acting brakes, automatic chip disposal system and designed for easy maintenance and simple tip-toe operation.

All trim is baled in a Model 127 baler, while skid-logs of finished paper are efficiently banded by overhead suspended strapping reels and an automatic strapping tool.

The baler is a heavy duty upstroke baler equipped with a special high torque motor, heavy duty brake, and reduction unit. It can be fed either through the top or the floor level.

NEW LITERATURE

Books

PAPER-MAKING PRACTICE, by H. Hardman & E. J. Cole. Published by the University of Toronto Press, Toronto 5, Canada. 334 pp. $7.50.

This book, supplementing existing textbooks, does not contain material found in the usual book on papermaking. Bibliographical appendices have, however, been added as appendices to each chapter as a guide to the available information. Containing 150 original drawings and 26 chapters, the book was written from a modified series of articles which were intended not only for the student of paper technology preparing for final examinations, but also for the professional papermaker, whether practical or technical, who has a limited amount of time in order to keep up with the latest developments in his field.

PLASTICS ENGINEERING HANDBOOK, 3rd Edition, Copyright by the Society of the Plastics Industry, Inc. Published by Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y. 565 pp. $15.00.

This new edition of a reliable reference book on plastics materials, methods and fabrication adds the advances made in the field since 1954. These advances are so numerous that the handbook now appears in a larger, double-column format. The book, describing every step in the manufacturing operation, includes the experience and know-how of over 200 technicians and authorities.

With new material on nomenclature, cellular plastics, decorating, welding, and plastics as adhesives, the text is fully illustrated with hundreds of photographs, tables and charts. Some of the charts alone, provide data of inestimable value to the plastics plant.

Booklets

CALIBRATION OF LINE STANDARDS OF LENGTH AND MEASURING TAPES AT THE NATIONAL BUREAU OF STANDARDS is the title of a booklet published by the U. S. Government Printing Office. This monograph, issued as a guide for anyone contemplating the submission of items (science, industry or government) to the National Bureau of Standards for standardization, includes an outline of the calibration methods used at NBS. The equipment used is described briefly. There is a discussion of some considerations that should be given as to whether or not a standard should be submitted to the bureau for calibration, and instructions are given on how to submit such standards. The appendix contains useful information on the use of steel tapes. Copies of NBS Monograph 15 may be obtained at $.15 each from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

FOOTCANDLE LEVELS AND INTERIOR LIGHTING DESIGN is now available from Westinghouse Electric Corp. This 60-page pocket-size manual, a new edition, is said to contain valuable information which includes tables which apply to modern lighting practices for various types of luminaires and light sources. Copies of booklet A-7235 may be obtained, at 10 cents per copy, by writing to Westinghouse Lamp Division, P. O. Box 388, Bloomfield, N. J.

USDA Reports

THE FOLLOWING RESEARCH NOTES may be obtained from Joseph F. Pechanec, director of the Southeastern Forest Experiment Station, U. S. Dept. of Agriculture Forest Service, Asheville, N. C.: No. 139, Overrun in Second-Growth Yellow Poplar; No. 140, The Effect of Site Preparation on Survival and Growth of Sycamore Cuttings; No. 141, Site Index Curves for Natural Stands of White Pine in the Southern Appalachians; No. 142, Firing Charcoal Kilns With the Doors Open.

THE FOLLOWING STATION PAPERS are obtainable from M. B. Dickerman, director of the Lake States Forest Experiment Station, U. S. Dept. of Agriculture Forest Service, St. Paul 1, Minn.: No. 77, Influence of Ownership on Forestry in Small Woodlands; No. 78, Volume Tables for Aerial Timber Estimating in Northern Minnesota; No. 79, The Forest Insect and Disease; No. 80, Trends in the Wisconsin Charcoal Market.

Manufacturers' Publications

These items are numbered for your convenience. Copies of the publications may be requested at no obligation through our Readers' Service Dept. Use the handy business reply card which accompanies this issue.

Slitter-winder

Black-Clawson Co. has made a reprint of a data sheet, available upon request, that outlines their slitter-winder equipment. Models outlined are the Dilts TD 4, 6, 10, 12, 14, and DR 15. Type, rewind capacity, widths and speeds are also given.

Circle No. 23 on Readers' Service Card

Silicones brochure

Dow Corning Corp. welcomes your request for an up-to-the-minute summary of the forms, properties and applications of their silicone products. This 16-page guide is extensively illustrated with photographs, tables, and graphs, the silicone products reviewed ranging from adhesives to release agents, laminating resins to rubber compounds, and electrical insulation to water repellents. The table of contents is arranged according to applications enabling quick, easy reference to silicone materials that resist the effects of time, heat, moisture, weathering, oxidation, and chemical attack.

Circle No. 24 on Readers' Service Card

Pressure and liquid level transmitter

Conoflow Corp. is offering a bulletin that describes the model P pressure and liquid level transmitter, an inexpensive, yet rugged instrument which is said to be capable of measuring pressures as high as 250 psi or ranges from as low as 0 to 100 in. of water. Operating on the simple force-balance principle, the model P transmits a linear 3 to 15 psi signal to any standard receiver element. The bulletin illustrates exclusive design features such as complete separation of the measuring diaphragm from the pneumatic pilot, which prevents process liquids and gases from backing up into air lines and damaging costly instruments.

Circle No. 25 on Readers' Service Card

High temperature water generators

Babcock & Wilcox Co. is offering a 36-page booklet that describes varied applications of the two basic high temperature water systems designed to utilize low-cost conventional water tube steam boilers or forced circulation boilers. Valuable information should be found by engineers, purchasing agents and others interested in high temperature water-space and process heating systems.

Circle No. 26 on Readers' Service Card

Agitation catalog

Improved Machinery Inc. welcomes your request for their 56-page catalog which contains extensive information on all types of pulp agitation and storage systems. The catalog, complete with illustrations, diagrams, photographs, and engineering data is available upon request.

Circle No. 27 on Readers' Service Card

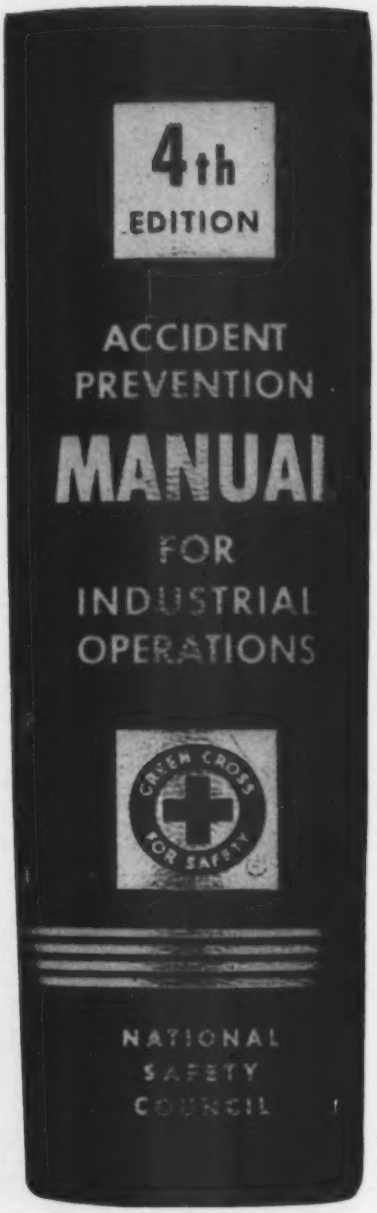
Data processing system

Radio Corp. of America has published a 28-page catalog, an introduction to the RCA 301 system. With descriptive and illustrative material, in addition to the many schematic diagrams of the system, individual components are illustrated and described.

Circle No. 28 on Readers' Service Card

General maintenance bulletin

Service Products Div., S. C. Johnson & Son Inc., welcomes your request for their bulletin which gives detailed information on the general maintenance of interior areas of commercial, industrial, institutional and public buildings. This 28-page manual covers the subject of floor maintenance at some length in addition to an explanation of the characteristics of 12 different floor surfaces which, explained in a chart, also details precautions to be observed with each, and lists types of products recommended for their upkeep. Other sections deal with general cleaning, safety, stain removal, furniture polish-



The new *4th Edition of the Accident Prevention Manual* contains over 1500 pages, over 500 illustrations and photographs—was reviewed by nearly 400 safety specialists from all industries before publication. It's the most complete, most accurate, most up-to-date safety manual available.

Single copy price $15.50. Use this stock number (121.51) when ordering.

NATIONAL SAFETY COUNCIL

425 North Michigan Ave., Chicago 11, Illinois

ing, solutions to many common maintenance problems and care of equipment.

Circle No. 29 on Readers' Service Card

Worm gear drives

Foote Bros. Gear & Machine Corp. welcomes your request for their engineering catalog which contains illustrations and descriptions of enclosed worm gear drives. It features simplified selection procedures and rating tables, enabling the user to make quick, accurate identification of the drive which meets a specific requirement. Designed for use by the engineer as well as the infrequent user of drive catalogs, this publication is the result of an extensive study of industry's need for easier to use drive application data, ratings, descriptions and dimensions.

Circle No. 30 on Readers' Service Card

Control valves

Conoflow Corp. has issued a new data sheet which gives concise and up-to-date information on the Conoflow series LB control valve. Showing features of construction, the data sheet also lists a variety of optional actuators and accessories which include an all-electric actuator, an oversized handwheel for manual operation, yoke-mounted pressure and temperature controllers, and a wide selection of trim materials for special services.

Circle No. 31 on Readers' Service Card

Stretcher for gang saws

Hanchett Mfg. Co. has announced the development of a new No. 104 heavy-duty stretcher for gang saws. Some of the features of this machine include its ability to handle 11-gauge and thinner saws, full anti-friction bearing construction for the first time in any stretcher and extreme ease of operation. The low cost of this stretcher is said to make it possible for all gang mills, regardless of size, to handle their own blade tensioning and leveling.

Circle No. 32 on Readers' Service Card

Water storage tanks

Chicago Bridge & Iron Co. has announced the publication of a 4-page brochure that describes special, elevated water storage tanks built as king-size replicas of consumer products. The new brochure is illustrated with photographs of steel structures which combine efficient water storage and sales promotion for a number of leading companies.

Circle No. 33 on Readers' Service Card

Eccentric valves

DeZurik Corp. has published an 8-page, 2-color bulletin which, in addition to describing their line of eccentric valves, lists features of the valve as well as materials, pressure ratings, dimensions, accessories, and outlines the broad areas where the valve is extensively used.

Circle No. 34 on Readers' Service Card

Silicon rectifier packages

Westinghouse Electric Corp., in a 20-page publication, presents a detailed description of a silicon power package. In addition, advantages of silicon over other rectifying methods are given. The new booklet, which tells why silicon rectifier packages offer dc power savings to the electrochemical and allied industries, is illustrated with photographs of equipment and schematic diagrams.

Circle No. 35 on Readers' Service Card

Agitation of paper stock

Warren Pumps Inc. is offering a four-page technical bulletin on stock agitation with circulating pumps. The bulletin discusses the problems of cleanliness of stock, efficiency, power economy and accessibility. Also included are drawings of typical circulating pump installations with both horizontal and vertical chests.

Circle No. 36 on Readers' Service Card

The Paper Industry
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PAPER RESEARCH
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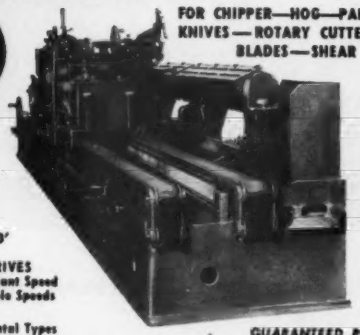
FOR CHIPPER—HOG—PAPER—VENEER KNIVES—ROTARY CUTTERS—DOCTOR BLADES—SHEAR BLADES, ETC



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Capacity— 84" to 396"
Motors— 7½ to 40 HP
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For more data circle 152 on Post Card

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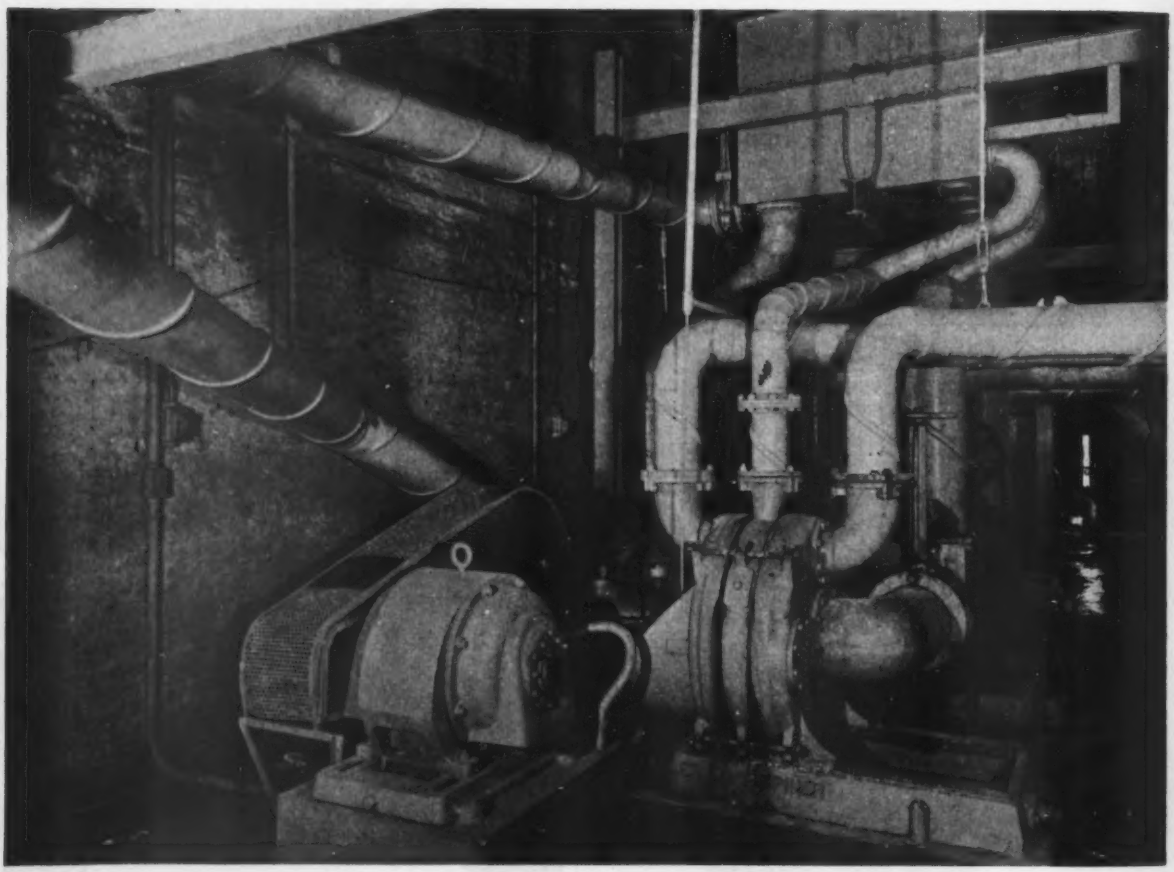
PIPE FOR THE PURPOSE

NAYLOR FABRICATIONS

in Carbon Steel, Alloys or Stainless Steel



It pays to look to NAYLOR fabrication service for pipe, fittings or special piping units to meet your exacting specifications and delivery schedule—whether it's carbon steel, alloys, or stainless steel.

★ NAYLOR pipe sizes range from 4″ to 30″ in diameter and wall thickness from 14 to 8 gauge.

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★ Standard fittings are available from stock.

Write for Bulletin No. 59 or send specifications for quotation

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1233 East 92nd Street, Chicago 19, Illinois

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For more data circle 155 on Post Card

MARKET QUOTATIONS

RAGS (Domestic)

New Cotton Cuttings

The following are brokers' and large dealers' average buying prices for sizeable lots in cents per pound f.o.b. New York:

	per cwt.
No. 1 white shirt cuttings	13.00— 13.50
Soft unbleached muslins	15.50— 16.00
Fancy shirt cuttings	4.50— 5.00
No. 1 percales	5.50— 6.00
No. 1 washables	2.25— 2.50
No. 1 light sileslas	6.50— 7.00
No. 1 light prints	4.75— 5.00
Light flannelettes	6.50— 7.00
Cottonades	2.75— 3.25
Blue overall cuttings	6.75— 7.25
Blue cheviots	6.75— 7.25
Canton flannels, bleached	10.50— 11.00
Canton flannels, unbleached	10.50— 11.00
Osnaburg cuttings	9.50— 10.50
Underwear cuts, bleached	14.50— 15.00
Underwear cuts, unbleached	14.50— 15.00
Sun tan khaki cuttings	5.00— 5.50
American linen cuttings	6.75— 7.25

Cotton Rags

The following are prices, cents per pound, paid by dealers and brokers f.o.b. New York:

	per cwt.
No. 1 roofing (Chicago)	50.00— 55.00
No. 2 roofing (Chicago)	40.00— 45.00
Twos and blues, repacked	1.75— 2.00
Thirds and blues, repacked	1.50— 1.75
No. 1 whites, repacked	—
No. 1 whites miscellaneous	—
No. 2 whites, repacked	—
No. 2 whites, miscellaneous	—

RAGS (Foreign)

(ex dock New York City)

New Rags

per cwt.

New dark cuttings, New mixed cuttings, New light sileslas, Light flannelettes, Unbleached cuttings, New white cuttings, New light oxfords, New light prints — Nominal

Old Rags

per cwt.

No. 1 white linens, No. 2 white linens, No. 3 white linens, No. 4 white linens, No. 1 white cottons, No. 2 white cottons, No. 3 white cottons, No. 4 white cottons, Extra light prints, Ordinary light printe, Medium light prints, Dutch blue cottons, French blue cottons, French blue linens, Checks and blues, Linsey garments, Dark cottons, Old shopperies — Nominal

ROPE and BAGGING

F.o.b. and ex dock New York City

Gunny No. 1, domestic	—
Gunny No. 1, foreign	—
No. 1 manila rope, domestic	—
No. 1 manila rope, foreign	—
New burlap cuts (soft)	—
Sisal strings	—
Mixed strings	—

WASTE PAPER

The following are prices, dollars per net ton, paid by brokers and large dealers for carload quantities of baled stock, f.o.b. cars New York:

No. 1 hard white envelope cuttings	95.00—100.00
No. 1 hard white shavings	80.00— 85.00
No. 1 soft white shavings	50.00— 55.00
Soft white shavings, uncoated	60.00— 65.00
Fly leaf shavings No. 1	20.00— 25.00
Fly leaf, woody, No. 1	20.00— 22.50
Mixed colored shavings	16.00— 18.00
No. 1 books and magazines	18.00— 20.00
Ledger stock, white, No. 1	40.00— 45.00
Ledger stock colored, No. 1 (Midwest ship)	30.00— 32.50
New manila envelope cuttings (free of groundwood)	65.00— 70.00
New manila envelope cuttings (containing groundwood)	45.00— 50.00
Manila tab cards	55.00— 57.00
Colored tab cards	42.50— 45.00
New northern kraft envelope cuttings	60.00— 65.00
Triple sorted kraft, 100%	35.00— 37.50
No. 1 old kraft	25.00—
White news cuts, No. 1	35.00— 40.00
No. 1 overissue news	15.00— 17.00
Folded news, special	13.00— 14.00
Folded news, ordinary	11.00— 12.00
Old corrugated boxes	18.00— 19.00
New jute corrugated cuts	19.00— 20.00
Mill wrappers	9.00— 11.00
Boxboard cuttings	4.00— 5.00
No. 1 mixed paper	1.00— 6.00

CHEMICALS

F.o.b. New York City

Alum, ammonium, Granular, bags, works, cwt.	4.30—
Alum, ammonium, Lump, drums, works, cwt.	5.05—
Alum, ammonium, Powdered, drums, works, cwt.	5.20—
1-Arginine, drums, kilo	90.00—
Blanc Fixe, Direct process, bags, c.l., works, ton	145.00—
Blanc Fixe, Direct process, bags, L. c. l., ton	155.00—
Bleaching Powder, drums, cwt.	—
Casein, domestic acid precipitated, 30-mesh bags, 10,000-lb. lots or more, shipping point, lb.	.56—
Casein, domestic acid precipitated, 80-mesh bags, 10,000-lb. lots or more, shipping point, lb.	.64—
China Clay, domestic dry-ground, airfloat, 99%, 325-mesh bags, c.l., Georgia works, ton	10.00— 12.00
China Clay, domestic dry-ground, airfloat, 99%, 300-mesh bags, c.l., Georgia works, ton	13.50— 14.50
Imported, white, lump, bulk, c. l., ex dock Phila, Portland, Me., gross ton	20.00— .35.00
Chlorine, liquid, Tanks, single units, works, freight equaled, cwt.	3.25—
Glycerine, refined (CP, USP) 99%, drums c. l., delivered lb.	.30⅞—
Litharge, commercial powdered, Barrels, c. l., works, freight equaled lb.	.13¾—
Rosin, gum, c. l., f.o.b. New York, cwt., K, M	13.75—
Rosin, gum, c. l., f.o.b. New York, cwt., N	14.00—
Rosin, gum, c. l., f.o.b. New York, cwt., WG	14.25—
Rosin, gum, c. l., f.o.b. New York, cwt., WW	14.60—
Rosin, wood, c. l., f.o.b., shipping point, cwt., K, M	12.00— 12.25
Rosin, wood, c. l., f.o.b., shipping point, cwt., N	12.35— 12.45
Rosin, wood, c. l., f.o.b., shipping point, cwt., WG	12.55—
Rosin, wood, c. l., f.o.b., shipping point, cwt., WW	12.75— 12.85
Saltcake, domestic, bulk works, 100% Na_2SO_4, basis ton	28.00—
Soda Ash, Dense, 58%, paper bags, c.l. works, cwt	1.90—
Soda Ash, Light, 58%, paper bags, c.l. works, cwt	1.85—
Soda, caustic, Flake, 76%, drums, c. l. works, freight equalled, cwt	5.20—
Soda, caustic, Solid, 76%, drums, c. l. works, cwt.	4.80—
Sodium Silicate, 40°Be, 1:3.2, turbid, drums, c. l., works, cwt.	1.65—
Sodium Silicate, 52°Be, turbid, 1:2.4, drums, c. l., works, cwt.	2.65—
Starch, Pearl, 140-lb. bags, cwt.	7.51—
Starch, Pearl, 100-lb. bags, cwt.	7.36—
Starch, Powdered, 100-lb. paper bags, cwt.	7.48—
Sulfur, crude, Bulk, c. l. mine, contract, long ton	23.50—
Talc, Domestic, fibrous, N. Y., grd., bags, c. l. works, ton	28.00—
Talc, Canadian, ground, bags, c. l. works, ton	20.00— 35.00
Titanium Pigment, Calcium-rutile base, regular, bags, c. l., lb.	.09⅛—
Titanium Pigment, Calcium-rutile base, high-tinting, drums, c. l., lb.	.14⅛—
Zinc Oxide Pigment, American process, Lead-free, bags, c. l. freight allowed, lb.	.14½—
Zinc Oxide Pigment, American process, Leaded, 35%, bags, c. l., freight allowed, lb.	.15⅛—

WOOD PULP

Quotations on domestic and Canadian pulp, dollars per short air-dry ton delivered consuming mills including basic allowances, follow:

Bleached sulfite, No. 1	155.00—
Bleached sulfite, Canadian	155.00—
Unbleached sulfite	135.00—
Unbleached sulfite, Canadian	135.00—
Bleached soda	150.00—
Bleached soda, Canadian	150.00—
Kraft, bleached hardwood	152.00—
Kraft, bleached	157.00—
Kraft, bleached southern	160.00—
Kraft, bleached Canadian	160.00—162.50
Kraft, unbleached southern	120.00—
Kraft, unbleached, Far West	125.00—
Kraft, unbleached Canadian eastern	135.00—
Kraft, unbleached Canadian western	120.00—125.00
Kraft, semi-bleached southern	—
Sulfite screenings	—
Sulfate screenings	—

Quotations on imported wood pulp, dollars per short air-dry ton on dock American Atlantic ports, follow:

Bleached sulfite, Swedish, freight allowed	155.00—
Bleached sulfite, Norwegian, del'd with limited freight allowance	155.00—
Bleached sulfite, Finnish, freight allowed	155.00—
Unbleached sulfite, Swedish, freight allowed	135.00—
Unbleached sulfite, Finnish, freight allowed	135.00—
Kraft, unbleached, Swedish, freight allowed	125.00—
Kraft, unbleached, Finnish, freight allowed	125.00—
Kraft, bleached, Swedish, on dock	157.50—162.50
Kraft, bleached, Norwegian	155.00—

PAPER

Quotations are mill quotations Chicago

Boards (prices per ton, delivered in Chicago, 10 tons or more): Plain chip	107.50
News vat lined chip	110.00
.009 chip, rolls	100.00
Filled news	111.50
Solid news	114.50
White vat lined chip	144.50
Chip tube and can stock	112.50
Single manila lined chip	162.50
Single jute lined chip	147.50
Container, 42-lb.	
Kraft liner (per 1000 sq. ft.)	2.68
White patent coated, .020	175.00
White patent coated, .018	177.50
White patent coated, .016	182.50

Book Paper (f.o.b. Chicago, c.l. skids per cwt): No. 1 enamels	20.80
No. 2 enamels	19.80
Machine-coated, 45- to 100-lb.	15.55— 19.00
60-lb. + uncoated offset, 25 × 38 (2000 lb.)	22.25
"A" grade English finish untrimmed, 25 × 38 (2000 lb.)	21.10

Rag Content Bond (white, 5000 to 10,000-lb. sub 20, ream sealed cartons):	per cwt
100% rag	—
75% "	—
50% "	—
25% "	—

Rag Content Ledger (white, 5000 to 10,000 lb., ream sealed cartons):	
100% rag	—
75% "	—
50% "	—
25% "	—

Sulfite Bond (white, 5000 to 10,000-lb. sub 20, ream sealed cartons):	
No. 1	—
No. 2	—
No. 4	—

Sulfite Ledger (white, 5000 to 10,000-lb., ream sealed cartons):	
No. 1	—
No. 2	—
No. 4	—

Newsprint (contract base price)	per ton
Rolls, standard	135.00
Sheets	Standard differentials

Kraft Wrapping — Natural (standard rolls 9- and 15-in. diam.)	per cwt
70-lb. and heavier	9.00
60-lb	9.25
50-lb.	9.50
40-lb.	9.75
35-lb.	10.25
30-lb.	11.00
25-lb.	11.75
20-lb.	12.75

No. 1 Kraft Butcher — Pink	per cwt
40-lb. only	10.50

(Sheets — Plus 50c cwt)

WHAT HAPPENS WHEN A NATION SPENDS MORE ON GAMBLING THAN IT SPENDS FOR HIGHER EDUCATION?

If you can find any Romans around, ask them. They lived pretty high on the hog in their day. That is, until some serious-minded neighbors from up North moved in. The rest is ancient history.

You'd think their fate would have taught us a lesson.

Yet today we Americans spend twenty billion dollars a year for legalized gambling, while we spend a niggardly four-and-a-half billion for higher education. Think of it! Over four times as much! We also spend six-and-a-half billion dollars a year for tobacco, nine billion dollars for alcoholic beverages, and billions more on other non-essentials.

Can't we read the handwriting on the wall?

Our very survival depends on the ability of our colleges and universities to continue to turn out thinking men and women. Yet today many of these fine institutions are hard put to make ends meet. Faculty salaries, generally, are so low that qualified teachers are leaving the campus in alarming numbers for better-paying jobs elsewhere.

In the face of this frightening trend, experts estimate that by 1970 college applications will have doubled.

If we are to keep our place among the leading nations of the world, we must do something about this grim situation before it is too late. The tuition usually paid by a college student covers less than half the actual cost of his education. The balance must somehow be made up by the institution. To meet this deficit even the most heavily endowed colleges and universities have to depend upon the generosity of alumni and public spirited citizens. In other words, they depend upon *you.*

For the sake of our country and our children, won't you do your part? Support the college of your choice *today.* Help it to prepare to meet the challenge of tomorrow. The rewards will be greater than you think.

It's important for you to know what the impending college crisis means to you. Write for a free booklet to HIGHER EDUCATION, Box 36, Times Square Station, New York 36, New York.

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FABRI DIGESTER CHIP VALVES

... a vital part of automation in modern pulping processes. They save valuable minutes each time a digester is charged, giving more cooks and producing more pulp.

Fig. 46
Fabri Digester Valve

FABRI DIGESTER CHIP VALVES reduce manual labor, releasing manpower for more productive duties.

- Eliminate time-consuming bolting of conventional digester cover.
- Resilient seat for tight closure.
- Deep Gate stuffing box with lantern ring packing.
- Approved by insurance underwriters.
- Cylinder or Electric motor operation.

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PAPER INDUSTRY

Whither?

... in production, processes, new products, markets

World newsprint capacity in excess of demand

World newsprint capacity, estimated at 17,416,000 tons in 1960, may exceed consumption by about 2.5 million tons.

In the U.S.A., it is reported that more attractive markets for other grades of paper and the increasing financial burden of maintaining reserve newsprint machines have led to the conversion of 100,000 tons of newsprint capacity to that of more profitable grades of paper.

Adhesives from hemlock bark

A unique and highly reactive polyphenolic intermediate extracted from hemlock bark has been successfully used as a partial replacement of resorcinol in the formulation of cold-setting adhesives, it is reported from Rayonier's Olympic Research Division.

According to reports, adhesives containing from 30 to 60 per cent of the bark extract gave excellent bonding quality in Douglas fir laminates prepared under room temperature setting conditions. The bonds were fully resistant to delamination under conditions of prolonged treatment with boiling water.

Rayon cord strapping offers new advantages in packaging

A new idea in industrial packaging is reflected by American Viscose Corp.'s "Avistrap" cord strapping. It is made of high-tenacity rayon cord and weighs 25 to 30 per cent as much as steel strapping of comparable strength, costs less, is easy to handle, reduces damage to packaged shipping cartons, and can be clearly and attractively imprinted with company or product names.

Uniform chip flow through Kamyr continuous digester

The results of recent experiments designed to measure the chip flow in Kamyr digesters by the use of detectors and tagged radioactive chips show uniform flow of chips through the digester irrespective of whether the digester is operated at full capacity, 70 per cent or 50 per cent of rated capacity.

The role of galactomannans

Recent experiments show that the addition of galactomannans to the paper stock results in marked improvement in (1) paper quality, including such properties as strength, smoothness, transparency and look-through, and (2) operation of the paper machine by increasing machine speed by 10 to 13 per cent and achieving steam economies in the dryer section as a result of improved drainage through the web.

It was also shown that the addition of strength-type gums reduces beating time by 20 to 30 per cent, while the addition of the retention-type gums improves fines and filler retention by 20 to 40 per cent.

COSTS LESS

TO BUY
INSTALL
OPERATE
MAINTAIN

The Mullis Thin Line Log Skinner is the answer to your debarking problems; it does a better debarking job, yet costs less money.

The Log Skinner is the toughest debarker ever built and, because of PATENTED DESIGN SIMPLICITY, costs less to buy, install, operate and maintain. The Skinner is built heavier than competitive debarkers yet saves you money with fewer moving parts. Most Log Skinner parts are Heavy-Duty Standard mill supply parts - available anywhere. You can get parts fast and inexpensively ! ! !

The Log Skinner is so simple in design that anyone can operate and service it. You don't need special tools or high priced men to maintain a Skinner.

AND, most important to you, the Mullis Log Skinner will debark every log - Straight or Crooked, Clear or Knotty, 4 feet to tree length, Wet or Dry, Hot Weather or Cold Weather.

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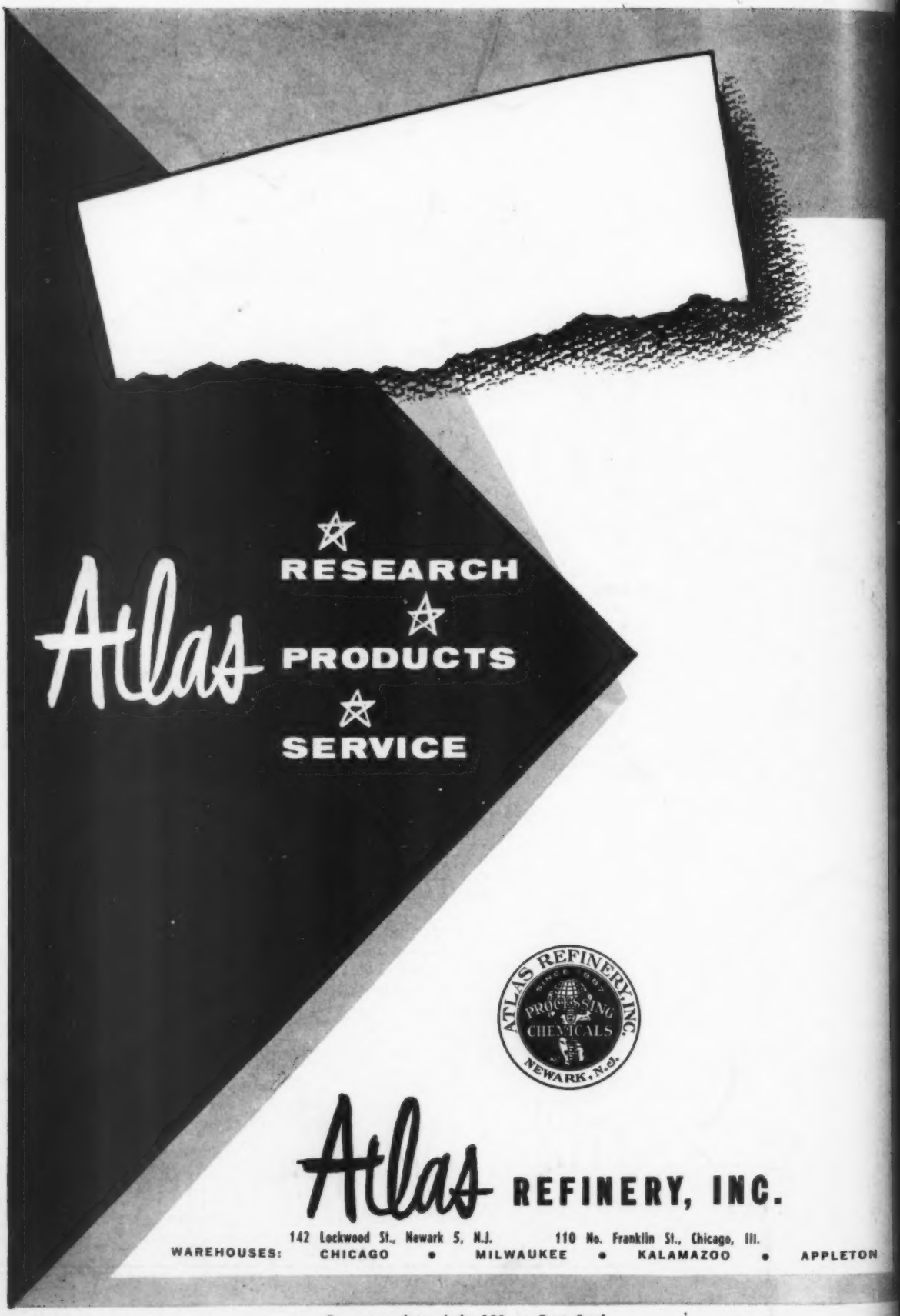

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